January, 1950

EDISON ELECTRIC INSTITUTE BULLETIN

LIPPINCOTT 1950 GEOGRAPHY, RESOURCES & INDUSTRY

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PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

October, 1948-1949

SOURCE AND DISPOSAL OF ENERGY—MONTH OF OCTOBER

	1949	1948	%
GENERATION* (Net)			
By Fuel Burning Plants	17,352,658,000	18,409,317,000	− 5.7
By Water Power Plants	6,935,536,000	5,975,743,000	+16.1
Total Generation	**24,288,194,000**	**24,385,060,000**	**− 0.4**
Add—Net Imports Over International Boundaries	49,120,000	69,000,000	−28.8
Less—Company Use	115,974,000	117,232,000	− 1.1
Less—Energy Used by Producer	372,687,000	400,764,000	− 7.0
Net Energy for Distribution	**23,848,653,000**	**23,936,064,000**	**− 0.4**
Losses and Unaccounted for	3,556,090,000	3,425,534,000	+ 3.8
Sales to Ultimate Customers	**20,292,563,000**	**20,510,530,000**	**− 1.1**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS As of October 31st			
Residential or Domestic	35,117,187	33,253,198	+ 5.6
Rural (Distinct Rural Rates)	1,787,336	1,671,823	+ 6.9
Commercial or Industrial:			
Small Light and Power	5,278,353	5,117,619	+ 3.1
Large Light and Power	231,891	206,512	+12.3
Other Customers	147,022	140,525	+ 4.6
Total Ultimate Customers	**42,561,789**	**40,389,677**	**+ 5.4**
KILOWATTHOUR SALES—During Month of October			
Residential or Domestic	4,749,418,000	4,171,557,000	+13.9
Rural (Distinct Rural Rates)	625,790,000	569,876,000	+ 9.8
Commercial or Industrial:			
Small Light and Power	3,876,484,000	3,633,574,000	+ 6.7
Large Light and Power	9,692,753,000	10,796,456,000	− 9.4
Street and Highway Lighting	250,575,000	232,678,000	+ 7.7
Other Public Authorities	580,871,000	526,211,000	+10.4
Railways and Railroads:			
Street and Interurban Railways	288,827,000	320,432,000	− 9.9
Electrified Steam Railroads	181,566,000	209,848,000	−13.5
Interdepartmental	46,279,000	49,898,000	− 7.3
Total to Ultimate Customers	**20,292,563,000**	**20,510,530,000**	**− 1.1**
Revenue from Ultimate Customers	**$383,250,200**	**$367,712,000**	**+ 4.2**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended October 31st			
Kilowatthours per Customer	1,664	1,540	+ 8.1
Average Annual Bill	$49.25	$46.51	+ 5.9
Revenue per Kilowatthour	2.96¢	3.02¢	− 2.0

(*) By Courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

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The Status of Rural Electrification Today

By Grover C. Neff

President, Wisconsin Power & Light Company

A speech before the Public Information Program General Meeting, Chicago, Ill., Nov. 18, 1949

BY 1920 the electric operating companies in the United States had built a vast network of transmission lines which provided 24-hour electric service to practically all the cities and villages of the nation. The steam turbine had been so perfected that the cost of manufacturing electricity had been greatly reduced. These two developments made it possible, for the first time, to supply, on a national scale, farm electric lines radiating from the urban centers with adequate electric power at a price sufficiently low to fit into the farmers' economy.

Rural Electric Service Committee

So, in 1921, the National Electric Light Association organized a Rural Electric Service Committee, to determine what was necessary to electrify rural America. I was chairman of that committee from 1922 to 1927, inclusive. We soon discovered that rural electrification was more than building lines up and down the highways. In 1920, farm machinery was designed to be driven by gasoline engines, horses, and manpower. A whole new line of machinery had to be developed. Methods of farming had to be changed if electric service was to carry out its full function in American Agriculture.

Joint Study Group Set Up in 1923

To solve these problems, a joint committee was set up, which included the Farm Bureau Federation, the National Grange, the American Society of Agricultural Engineers, the U.S.D.A., and others, together with the utility people. This cooperative organization was known as the Committee on the Relation of Electricity to Agriculture. It was organized in 1923 and disbanded in 1939. Similar joint committees of state-wide scope were organized and active in 25 states.

At first the utility companies were not properly organized to develop rural electrification, but they soon established rural service departments and employed agriculturally trained men. The printed report of the Rural Service Committee for 1926 and 1927 states that 57 companies had established such departments, and 43 other companies were employing men trained in agriculture.

This same report estimates how fast American farms may be electrified, and I quote: "If this increase continues at the same rate, there will be approximately 1,000,000 electrified farms in this country by the end of 1932; and, by 1938, . . . approximately 3,000,000, which is nearly . . . one-half the total farms in this country."

Utility Farm Service Expanded Rapidly

Utility companies began to connect farm customers at a constantly increasing rate. In 1924, about 25,000 new farms were connected; in 1925, 40,000 farms; in 1926, 62,000 farms; in 1927, 84,000 farms, and, in 1928, 112,000 new farms were connected. The utility companies were definitely getting into stride and making rapid progress in taking electric service to the farms of this nation. Except for the big depression which began in 1929, it is my opinion that the committee's estimate of 3,000,000 farms using electric service by 1938 would have been realized. However, the big depression definitely stopped this activity. The farmers did not have money to wire their places; the utility companies had very little money to build lines. The result was that from 1929 until about 1935 there was very little activity in rural electrification.

However, in 1935, business conditions had so improved that utility companies were able to borrow money and the farmers were able to get some money. At that time the utility companies resumed the rural electrification program they had dropped in 1929, and they have been actively engaged in it ever since. In 1936, REA came into the picture, and they, too, have been active in rural electrification.

Accomplishments to Date

On October 17, 1945, I appeared before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, on HR-1742, a bill to give REA additional appropriations. My testimony included rather complete information on the history of rural electrification and certain charts showing its growth from 1930 to 1945, with an estimate for 1948. Copies of these charts are in the printed transcript of testimony and are shown here. Fig. 1 deals with farms, exclusively. Fig. 2 deals with rural dwellings.

Progress of Farm Service

According to the information available when Fig. 1 was made, the number of farms in the United States was 6,300,000 in 1930; 6,800,000 in 1935; 6,100,000 in 1940; and 6,000,000 in 1945.

Fig. 1 also shows that in 1930, 650,000 farms were using electric service, and about 1,000,000 farms had service available. By 1935, in spite of the severe depression, the number of farms using electric service had increased to about

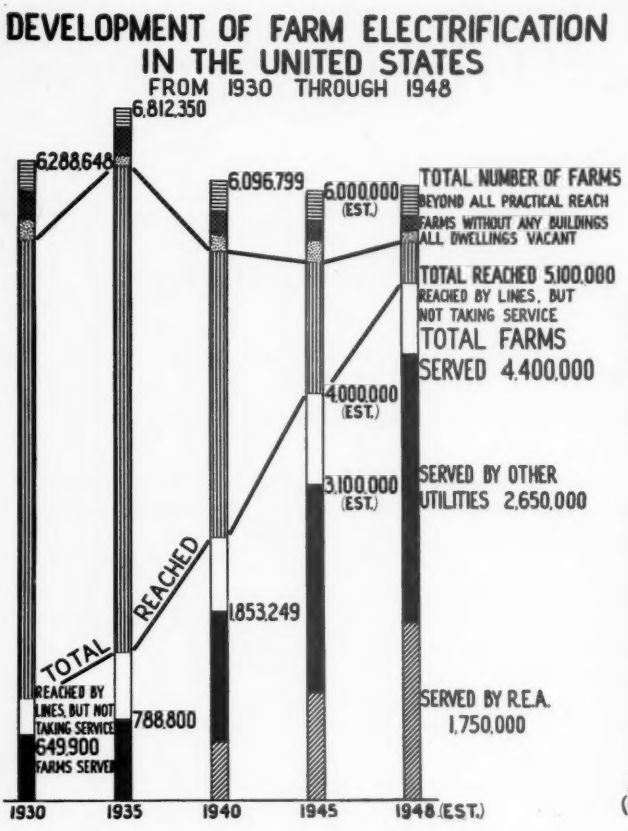


Fig. 1—Increase in Farms Served and Reached by Electric Lines

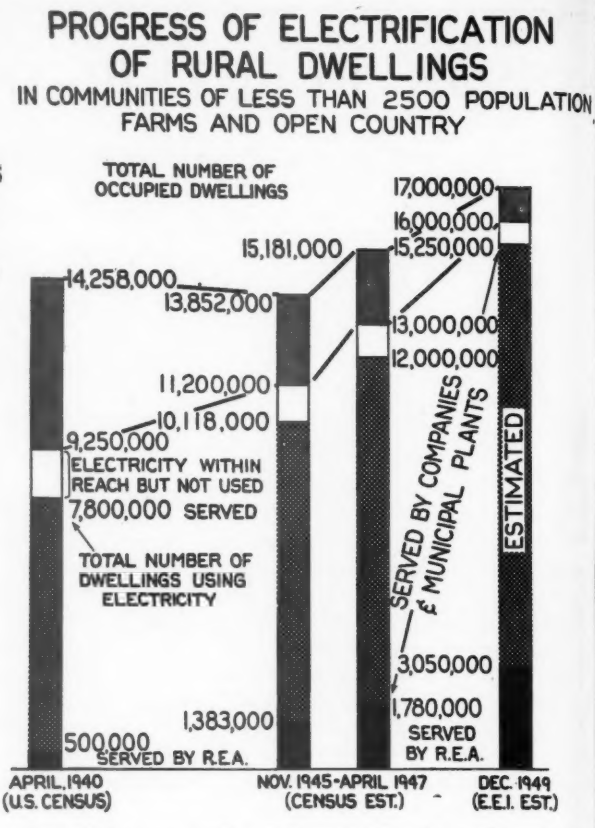


Fig. 2—Increase in Rural Occupied Dwellings Electrified

790,000, and about 1,300,000 farms had electricity available. With better business conditions and the utility companies' resumption of the rural electrification program they had been forced to drop in 1929, the total number of farms using electric service at the end of 1940 rose to 1,850,000, and about 2,500,000 farms had electricity available. About 600,000 farms were served by REA cooperatives. At the end of 1945, 3,100,000 farms were using electric service, and 4,000,000 farms had electric service available. About 1,000,000 farms were served by REA.

5,100,000 Farms Have Service Available

The estimate for the end of 1948 was that 4,400,000 farms would be using electric service, and 5,100,000 would have it available. REA would be serving 1,750,000 farms. This was the estimate made in 1945. The actual figures for December 31, 1948, as compiled by the Edison Electric Institute, show 4,388,200 farms served. That is so near the estimate that I am able to use the same chart today that I used 3 years ago. The number of farms served by REA at the end of 1948 was 1,920,000, which is 180,000 more than I estimated 3 years ago. But, on the whole, the chart supplied to the Congressional Committee in 1945 has been proved to be approximately correct by the things that have happened. Construction progress in 1949 shows that by the end of this year 4,980,000 or 85 per cent of the farms will be taking service.

From this chart it is evident that the job of extending electric service to the farms of this country has been reduced from a big job in 1930 to a very small job at the present time.

Fig. 2 deals with all dwellings in communities of 2,500 population or less, and in all farming sections. Some farms have more than one dwelling. Scattered throughout the country you will find country stores, garages, schools, churches, etc. All of these are included in Fig. 2.

Service Available to Increasing Number

Fig. 2 shows that, on April 1, 1940, there were 14,250,000 occupied buildings located as just described. Of these, 7,800,000 had electric service, and it was available in total to 9,250,000. In November, 1945, there were 13,852,000 such occupied buildings; 10,118,000 had electric service, and 11,200,000 had service available. REA served 1,383,000. In April, 1947, there were 15,181,000 occupied buildings. Of these 12,000,000 had electric service, and it was available to 13,000,000.

On Fig. 2, we have estimated that, on December 31, 1949, out of a total of 17,000,000 occupied buildings 15,250,000 of these would have electric service and that it would be available to 16,000,000. We have estimated that REA would serve 3,050,000.

From this, it can be seen that the great program of extending electric service to rural America is nearly over.

REA

Mr. Wickard reports that the funds advanced to the co-ops as of May 31, 1949, were $1,243,000,000, and that at that time Congress had authorized $1,875,000,000. The money authorized exceeded the money advanced by $632,000,000. Congress has since authorized

(*Continued on page* 5)

Community Service in West Virginia

"What We Do For Ourselves Withers and Dies; What We Do For Others Lives in the Hearts of All"

By A. C. Spurr
President, Monongahela Power Company

Remarks in acceptance of the Henry Laurence Gantt Memorial Gold Medal, New York, N. Y., November 30, 1949

WE are in community development work (when I speak of "we" I mean the power company), because we think it is good, sound business to be in it.

Ours is a medium sized electric company, operating throughout a territory rich in natural resources. In the part of West Virginia which we serve, there are no large cities. In most of the larger communities we have the greatest investment of any single industry. In the rural areas, where much of our investment has been made in the more recent years, a profitable return still is in the years to come. It *will* come only as those areas grow and expand their economy.

A Realistic View

Ours has not been a program designed as public relations or philanthropy; rather, it is the realistic view that by helping to make our communities grow, we will likewise grow.

That doesn't mean there isn't public relations value in what we're doing. You know that our problems (yours and mine) are not the community problems. But the communities' problems are our problem. It follows that if we are helpful in solving the community problems we become good citizens and the community is interested in the things that affect our ability to continue our work as good citizens.

One further general observation before I outline (as suggested by your committee) our practices.

Years ago in a college course we discussed for weeks the motivating impulse of humanity. Our conclusions were that re-creation—either of brain children or body children—underlay all human motivation. Be that just a school boy's decision or solid fact, we have found in our 15 years' work in rural and urban communities that everyone seems to delight in having a part in working to create. The people we work with—community leaders, extension workers, university professors, farm families, our own employees—they all are realizing a desire to have a part in things—things that are going to make their communities better places for their children who will work and live in them—things that will make those children want to stay at home and be a part of an area with a future. There's a satisfying feeling in being able to say "that was a good job; I had a part in it." The at-

"In Behalf of All, I Accept . . ."

Colonel Griffith, Mr. Jones, honored guests, members of the American Society of Mechanical Engineers and the American Management Association, there's a whole crowd of us standing here today to receive the Henry Laurence Gantt gold medal for community service.

Much as I enjoy and appreciate the honor of being chosen to receive this medal, I had to bring these others along to share in the glory because it rightly belongs to them. You don't see them; they're here in spirit. But I can hear them and even feel them.

I am, as the recipient of the Gantt medal, only the representative of all who have joined in a broad program of community development down in West Virginia.

With me today are the representatives of communities throughout our area of operation, urban and rural—all of them communities that are cooperating in organized efforts to improve themselves and each other.

With me are the employees of the Monongahela Power Company, a loyal group who, besides their regular jobs, are doing much to set the example of good citizenship by lending their help to the projects of community betterment.

At my elbows are the county agents and the technicians who make up the Agricultural Extension Service, the Soil Conservation Service, the State Department of Agriculture, the State Planning Board and the State University. With me also are the Farm Bureau people, members of the Farm Women's clubs and the other agencies of community development such as our Chambers of Commerce.

All of them were in this business of development long ahead of the power company. We are *their* helpers.

I'm glad that my good friend Paul Griffith is here today, but I would have liked to have had Secretary Johnson for a particular reason. He has a share in the award because he is a member of one of our communities and, from the beginning, has been most helpful in all of the development efforts.

Last, but not least, there are the stockholders of the Monongahela Power Company—people who have had faith in our undertakings, believing wholeheartedly that community building does pay off.

In behalf of all of them I accept this handsome medal with a mixed feeling of pride and deep humility—pride that I have had a small part in a big program of Community Action, humility in the realization that despite all we have done, we still have far to go if we are to reach the high standards for which Mr. Gantt stood.

mosphere of mutual admiration is an excellent one in which to work.

Actually, there isn't a thing original about any of our programs unless it is the idea that a power company has a stake in conservation, forestry, farming, recreation and related community topics. The programs have been there for many years. None will argue the soundness of the principles preached by the Agricultural Extension Service or any of the other agencies I have mentioned. There is a wealth of guidance to be had on proper community re-creation. We have, in every community, people who are better qualified than a power company to decide what their community has, what it needs and where it is going.

"Community Action"

Our services are supplemental. We are available to help wherever we can, to be a sort of cheerleader and, in some instances, a coordinator. Into that phrase, "Community action," we're trying to put more meaning, particularly on the second word.

The program, insofar as I have been associated with it, goes back 15 years. At that time our economy was in pretty bad shape. In West Virginia then, coal was the principal industry and in our territory particularly, most of our communities were one-industry towns. When the mines were down, everything was down. Farms were earning an annual income of only $350. Twenty per cent of our people were on relief rolls in 1934.

Upper Monongahela Valley Association

Something had to be done. The Upper Monongahela Valley Association, an organization of ten counties in the immediate area of our headquarters, proved to be the answer. The newspapers of the valley took hold as sponsors and soon the leaders in those ten counties were beginning to stir. A factory here, a helping hand to the farmer, those meetings in the form of goodwill tours—none of them major projects, perhaps, but all of them signs that something was being done. Spirit began to revive.

Out of our experience with the Valley Association came our Territorial Development Department. We still are a principal supporter of the Valley Association and our people, when in the Valley territory, work as representatives of that association. In the area of the newer development agency in our Ohio River section, the Little Kanawha Regional Council, we work for that body. Where there is no such vehicle, we work as the Monongahela Power Company. But the vehicle is comparatively unimportant.

"Farming For Better Living"

"Farming for Better Living" is an annual competition. Farmers who enroll are given a book of recommended practices. A county council, made up of bankers, business people, professional men and women and farm representatives, actually directs the contest, judges the results and designates the winners. This year about 2,000 farm families took part in 27 of our counties. In each county a banquet is held, bringing together urban and rural interests. Community civic and service clubs usually sponsor the dinner and merchants donate to the premium list. Before the winter is over, regional winners and a final sweepstakes champion will be named.

In each of our operating divisions we have a man who supervises this program. In every instance he is a man who can talk straight to the farmer—a man who has come up from the grass roots and is especially trained in agricultural practices.

Last year the power company joined with the Extension Service and other agencies in a Rural Community Development program. In one year that program has grown from seven participating communities to 22. Through it, the community is encouraged to work for its own betterment in such specific fields as farming, education, general appearance, recreation and church. To that program we contribute, besides cash prizes, a supervisor plus the service of our counselors in the various fields mentioned.

Conservation Program

We have a soil and water conservationist, not because the Company has a serious conservation problem but because the whole territory has a problem. When our farms adopt the principles of proper land use we can expect better farming and better farm profits. Too many of our farmers are wasting the land they have and cultivating more than they need because they aren't utilizing their land to best advantage. More than that, conservation means more cover for wild life, better quality of food, improvement of water supply, and, by no means the least, flood prevention. By hiring a conservationist, we are contributing another leader to the movement, and because he is working for private industry, he has more influence than if he was on the Government's payroll.

There's a forester on our staff, too. His job is to promote better forest management and a better realization of the woodlot's value as a source of farm income. West Virginia once was an important timber state. By working with the agencies that are seeking to rehabilitate our forests we have a chance to bring West Virginia back to a prominent position as a forest state.

Farm and Home Counselors

We have a counselor who is prepared to advise the farmer on farm building and electric equipment problems, a woman who is taking better methods to the farm women and the youth groups, and, outside the farming circle, a housing counselor, recreation counselor and an industrial counselor.

None of these people is associated with the commercial phase of our business. They don't sell power or appliances. They don't know a kilowatthour from a hole-in-the-ground. They are left free to do an honest job of community development.

Artificial Insemination Program

We bought and distributed pure-bred bulls to improve dairy herds until the idea of artificial insemination came along; then we assisted in its preliminary studies, planning and eventual organization of what now is a highly successful artificial insemination set-up for dairy cattle. We've also been active in the marketing of potatoes, buckwheat, cauliflower and strawberries, and, in every way possible, have aided and abetted the development of other farm enterprises, notably beef cattle, sheep and pigs.

It was through the offices of the Valley Association that coal operators of the area were brought together, formed a fuel engineering service and found that industry and the equipment manufacturers were interested in installing boiler equipment that offered flexibility of fuel choice. Along with the preferred sizes of coals, our mines produced slack coal which no one wanted. That flexibility of equipment has created a market for slack. Now it can be burned efficiently, and it's more economical than

the select sizes. The new market for slack, a result of the new boiler installations, is figured at around 40 million tons per year.

I could go on, but rather than bore you with details I'll do a bit of summing up.

Regional Income Up 225%

We've come a long way since 1935. The region's income is up 225 per cent. Coal still is our No. 1 industry and it has paced the area's advancement. It now is highly mechanized and most of the "eyesores" have been cleared away. But along with coal there has been added a much greater diversity of industry. In 1940 there were 495 factories in the Valley employing 38,973 people. In 1948 there were 555 factories furnishing 69,200 jobs. That's just in the 10-county Monongahela Valley area. Through the development of salt brines, $120 million has been spent on industrial development in the Ohio Valley area of our territory in the past five years.

Farming, too, is on the upgrade and more highly diversified and profitable. There's a better understanding of the enterprises that are best suited to our farms, and the practices that mean dollars in the farmer's pocket are spreading.

Average farm earnings climbed from $342 in 1932 to $1,279 in 1945.

To Double Property Value

A good economic weather vane is our own operations record. In 1935 we were serving 68,000 residential customers. At the close of last year there were 141,000. In 1937 only 17.5 per cent of our rural families had electricity. The end of next year will see our rural electrification job practically complete. The whole territory has advanced so steadily that in 1947 we launched an expansion program that, by the end of 1952, will more than double the value of our properties.

But figures don't tell the whole story. There's the satisfaction of living in a community where the spirit of the people is high, where there is a natural tendency toward cooperation and where you feel that you and your company are accepted as citizens and enjoy the respect and friendship of the people whom you are dedicated to serve. It's the sort of relationship that strengthens our faith in the future of the Amercan community and convinces us that, where people work together and tackle their own problems as they arise, we're not as likely to fall prey to the socialistic trends of the day.

Having watched the results over 15 years, I'm ready to add a hearty "Amen" to a platitude I picked up a few days ago: "What we do for ourselves withers and dies; what we do for others lives in the hearts of all."

This medal which I receive today commemorates the memory of a man who practiced that philosophy and, through his example, has led many along the same path. I'm pleased to believe that I have had a small part in spreading that philosophy through the hills of West Virginia. For myself and the others with whom I've been privileged to work—the people who have done the real work—thanks.

The Status of Rural Electrification Today

(*Continued from page 2*)

another $500,000,000 to REA, which, if added to the $632,000,000 available at the end of May, would give REA $1,132,000,000 of additional funds to advance to REA co-ops. This is 91 per cent as much money as they have actually used in the 13 years of their existence.

More Money for REA

Mr. Wickard claims that he will need even more money than this $1,132,000,000 to complete his work and states that

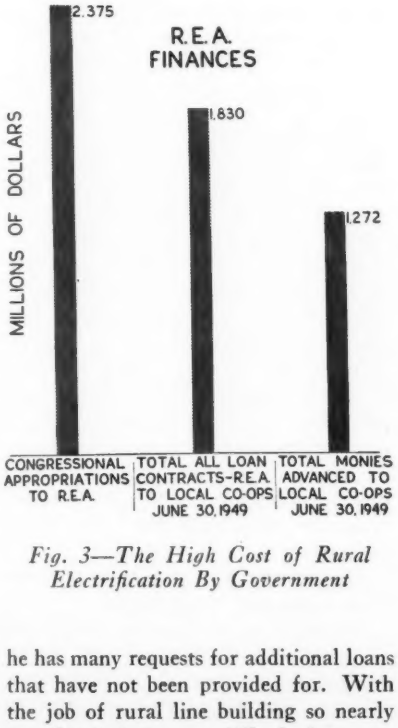


Fig. 3—The High Cost of Rural Electrification By Government

he has many requests for additional loans that have not been provided for. With the job of rural line building so nearly completed, it is very difficult for us to see how these additional large sums of money can be used, except to build generating plants and duplicate existing transmission systems.

REA—A Political Tool

We have never had any objection to REA carrying out the job of extending electric service to farmers who did not have it. Now, by its actions, it has made us fearful that REA is being used as a tool of the group which wants the government to take over the utility business. We are opposed to that.

Summary

The electric utility companies:

1. Pioneered rural electrification in the United States;
2. Developed, through their research work in the 1920's:
   a. The low-cost rural line,
   b. New types of power-driven farm equipment designed for electricity,
   c. Close cooperation between all parties really interested in farm electrification,
   d. Organization of utility departments to give proper attention to farm electrification;
3. Built electric lines to 112,000 farms during the 12 months of 1928 and planned to serve 3,000,000 farms by December 31, 1938;
4. Have invested more than $1,000,000,000 in equipment to serve 2,400,000 farms at retail;
5. Furnish more than ½ of the REA co-op electrical requirements at wholesale; and
6. Have been the major factor in making electric service available to more than 80 per cent of the farms of the United States.

An Electric Company's Rural Development Program

By L. L. Koontz

System Rural Supervisor, Appalachian Electric Power Company

An address before the Agricultural Development Committee, General Sales Conference, Southeastern Electric Exchange, Atlanta, Georgia, October 26, 1949

THIS is the story of a utility's rural development program that started away back in the early twenties. It has been a definite, planned and coordinated program carried out by an aggressive, wide-awake rural organization functioning under the farsighted business management of a privately owned electric utility. Starting its program in the early 20's, the Appalachian Electric Power Company was serving at the end of September, 1949, approximately 165,000 farm and rural customers in 51 counties of Virginia and West Virginia; by the end of 1950 it will have about 22,000 miles of rural line in operation—better than 95 per cent of the farm and rural families in its service area will have available or will be enjoying the benefits of dependable electric service at reasonable rates. We are at present in the transition from an aggressive rural line building program to an intensified rural load building, promotional and educational program.

Electricity is making many direct contributions to agricultural development and advancement, in the form of more efficient operation, savings of time and labor, increased production, lower production cost, reduced losses, improved quality, reduced hazards, and many others, such as improved living conditions and standards of the individual, the community and the general area.

Electricity—An Integral Part of Agriculture

The Appalachian Electric Power Company knows and appreciates the fact that electricity is an integral part of agriculture—just as important as good seed, good fertilizer, etc.—also that it is definitely a vital and essential factor in any progressive and successful farm or home management program. It has accepted its responsibility, but recognizes that electricity is but one of many important factors, all of which must be considered collectively in the agricultural development and advancement of an area.

> **"I am not unmindful of the fact that since the early thirties we have been hearing, on an increasing scale, that privately owned and business-managed electric utilities do not have definite rural development programs and are not or will not accept their responsibilities in the rural areas they serve—you are well aware of the far-reaching effects of this misleading and basically unfounded attack upon our American Free Enterprise system."**

Electric power is the potential medium through which farm and rural life can be transformed from one of drudgery to one enjoying most of the conveniences and advantages of both city and country living. It is the most practical form of energy for light, power, refrigeration and many heating applications on the farm and in the home. Electrical equipment is most readily adaptable to automatic operation and positive control, resulting in savings of time, labor and money.

Electricity Benefits Farmer

The correct use of electrical equipment in producing and processing many farm products lowers production cost and makes possible the marketing of higher quality products, resulting in greater farm income. This improves the economic status of our farm population, which is so fundamental to our general prosperity. Electricity provides the most practical, efficient and economical means of lighting the farm and home for safety and convenience; putting water under pressure for modern plumbing, sanitation and production facilities; preserving and conserving foods by refrigeration, and rendering hundreds of other services that contribute to the health, prosperity and general welfare of the farm and rural family.

Electricity is a relatively new form of energy to most farm and rural people and because of the lack of proper and adequate information they are slow to recognize its value and derive the maximum benefit from its use. Therefore, the utility not only has the responsibility of extending the lines to the rural and farm families in its service area; it is also faced with the responsibility of making sure they make correct and practical use of the service—to make sure the customer and the company alike obtain the maximum benefits and returns from their investments. You must realize that, considering wiring, equipment, etc., the customer has practically as much invested as the electric utility serving him. It therefore becomes a problem of mutual interest.

Education and Research Needed

There is an urgent need for more thorough and intensive educational work on the part of our State Extension Services, State Departments of Education, etc., to inform farm and rural people about electricity and how they can use it most effectively. There is a parallel need for more research to improve on present and to develop new methods and applications of electricity to agriculture on the part of our state colleges and experiment stations. Some progress is being made in both education and research but these activities have not kept pace with the rapid progress of the rural line extension program of the public utilities.

My company's rural electrification program actually was started in 1926. Early in 1929 the company participated in the study made by a joint committee appointed by the Governor of Virginia to attempt to work out a uniform plan of rural electrification for the state. This committee consisted of representatives of the Virginia Utilities Association, the State Corporation Commission, the Virginia Polytechnic Institute and farm organizations. In April of that year, and prior to the final report of the committee, the company placed on file with the State Corporation Commission of Virginia and the Public Service Commission of West Virginia a rural extension plan which was substantially the

same as the one later adopted by these states.

The program progressed at a moderate rate until 1935. At that time a comprehensive survey was started of all the area considered as territory which the company might be expected to serve in assuming its responsibility for territorial development. This survey entailed complete mapping and indication of existing and potential customers by classifications, such as farms, non-farms, schools, churches, etc. This was not completed until 1936, at which time a uniform and intensified program of rural line construction was set in motion.

Uniform Rates for Rural Area

Such a broad program necessitated the establishing and training of an organization capable not only of carrying on the many phases of work involved in constructing new lines, but also the work of assisting customers in problems of wiring, securing proper electrical appliances and equipment, and educating them in new and beneficial uses of our service. Our experience soon convinced us of the need for uniform rates for rural areas which would bring to these users electric service at the same cost as customers in urban areas. Such rates have been in effect for many years.

The advent of the war stopped the construction program, and to a large extent discontinued much of the remainder of the program. However, except for that period, it has gone through a continual process of improvement, with a great many of the members of the original organization still participating in and guiding its progress.

Philosophy of Service

It may also be of some interest to indicate something of the company's philosophy with regard to its program, and why the activities are carried beyond what might be required, should it be concerned only with the building of lines and the maintenance of service.

A great many of the sections in the area served by the company in both the states of Virginia and West Virginia are non-productive for farming. Others provide sources of income to customers through a combination of farming and industrial work, while many others are highly productive agriculturally. The company, as a private enterprise, must of necessity emphasize the importance of finding ways and means of increasing the use of its service. This has been accomplished through the promotion of the use of equipment which contributes most to the customer's welfare. It is of interest to note that the company employed Agricultural Engineers and Home Economists as early as 1928. However, the people who comprise its organization take pride in the fact that our program also includes many other activities not directly designed to increase the use of service.

Perhaps the company's policy can be stated briefly by saying that its officials believe that our responsibilities are not confined to providing dependable and satisfactory service throughout the entire area in which it operates. They believe that the company, as a good citizen, must also take an active and unselfish part in making other contributions of service in helping to develop the communities and areas in which it serves.

Rural Objectives

The Appalachian Electric Power Company has diligently pursued a planned and orderly course toward its rural objectives—which, stated briefly, are:

A. To make complete, ample, economical and dependable electric service readily available to all farm and rural families in its service area—practical and complete area coverage by the close of 1950.

B. To help the customer in every possible way to know and understand more about their servant "Electricity," and to assist and advise with them regarding the most practical and efficient application of this service to their individual requirements and situations.

C. To train, encourage and urge the manufacturers, distributors and local dealers to make readily available the proper types and kinds of electrical equipment and appliances best adapted to the customer's needs and requirements on a fair and reasonable basis, also to stock, repair and service all such equipment and appliances.

D. To cooperate closely with all educational organizations, agencies and groups whose programs and activities are sincerely directed at the improvement of the social and economic standards of rural people.

E. To aid and assist in improving the economic situation of the individual customer, community, county and general service area.

F. To share in the successes and disappointments along with its customers. To become a working citizen, a recognized and vital part of the life and experiences of its customers and service area.

A Year's Accomplishments

To facilitate and hasten the actual accomplishment of the foregoing general rural objectives the A. E. P. Co. has, during the year 1948, made these progressive and aggressive contributions to the rapid progress of Farm Electrification and Rural Advancement in its service area.

1. Continued to expand, develop and train its rural organization that they may be better qualified, more alert, capable and ready to recognize, assume and discharge its responsibilities to the customer and company with dispatch and confidence.

2. During 1948 the A. E. P. Co. built 3414.71 miles of new rural extensions, an increase of 27.5 per cent during the year.

3. Increased the number of new farm and rural customers connected by 24,453, an increase of 27.8 per cent for the year 1948.

4. At the end of 1948 there were a total of 60,517 farm customers served, representing a 57.9 per cent gain during the year. The farm customers constitute 40.7 per cent of the total farm and rural customers served by the company.

16,600 Miles of Rural Line

5. A. E. P. Co. closed the year 1948 with a total of 16,601.4 miles of rural line in operation, serving a total of 148,554 farm and rural customers.

6. Closed the year with 195.86 miles under actual construction, and 261 miles ready for construction, to serve another 2213 farm and rural customers. Hundreds of additional miles were in varying stages of negotiation to serve more and more farm and rural customers during 1949.

7. Projected plans to complete the job of serving the territory on an area coverage basis during 1949-50, at which time the A. E. P. Co. will have an estimated 21,826 miles of rural lines in operation to serve a total of 187,103 farm and rural customers. All farm and rural customers to be enjoying electric service or have it readily available by the close of 1950 is our plan and earnest desire—complete area coverage an accomplished fact.

8. A. E. P. Co. farm and rural customers used a total of 151,777,538 kwhr. during the year 1948, an increase of 63,801,157 kwhr over the previous year.

1329 Kwhr per Customer

9. The average annual kilowatthour consumption per farm and rural customer increased from 1127 during 1947 to 1329 kwhr per customer for 1948, a 17.9 per cent increase during the year. This is thought to be an excellent increase in view of the large increase in number of farm and rural customers connected during 1948, which, without a well-rounded and aggressive educational and promotional program would normally tend to lower the average use per customer.

Yes—electricity is an integral part of agriculture. Our farm and rural customers are putting electricity to work all along A. E. P. Co. lines to improve their economic situations and rural living conditions. Many of our older farm customers use over 5000 kwhr annually, some over 25,000, and a few use in excess of 100,000 kwhr annually.

10. Conducted a survey to properly segregate our lines and customers into rural and urban classifications so that our activities in the rural territory would be properly directed.

11. Continued individual contact and free advisory service with our old and new farm and rural customers in a sincere effort to make sure they understood and obtained the proper kind, type, size and installation of electrical equipment and appliances best suited and adapted to their individual requirements and situations, thus helping them to help themselves to avoid many costly mistakes and misapplications—valuable and much appreciated service.

12. Continued and expanded our efforts to get the story of "Electricity and What It Could Do for the Customer and the Area" across in group meetings of all kinds, to all ages and to all income levels.

Work With Rural Youth

13. Worked closely with all rural youth, such as 4-H Clubs, F. F. A. and F. H. A. Chapters, etc., at all levels—state, regional, county, and individual club and member. These activities did not always directly involve electricity, but always contributed to their general advancement and betterment or the welfare of the general area — problems worthy of mutual interest and consideration.

14. Worked with adult customers in organized clubs or groups — such as, Home Demonstration Clubs, Civic Clubs, Home Economics groups, P. T. A., Chambers of Commerce, Grange, Farm Bureaus, etc.

Aided Tobacco Farmers

15. *Launched a four-point, long-range, right-on-the-farm investigation to help the tobacco farmers increase their net profit from that important cash crop.* Farmers lost much of their net profit from a $70,475,000 tobacco crop in West Virginia and Virginia during 1948. This loss interested Appalachian's Agricultural Engineers and Rural Representatives. It occurs between the cutting, grading and curing of the tobacco and its sale.

In cooperation with the farmers, extension service workers, and other agencies, a long-range four-point program to reduce the loss was launched in 1948.

Better grading practices were attacked during 1948 as the first step of the program, because it was thought that here most immediate results could be obtained. The results indicated the farmer's net income can be increased by 10 per cent through Step One alone.

The other steps in the program which will be started in 1949, in addition to expanding Step One, are: Step II—*better, hardy, disease-free plants;* Step III —*supplemental irrigation;* and Step IV —*better curing practices.*

At the culmination of this long-range program, it is estimated that the net income to farmers from tobacco alone may be increased by $18,000,000.

16. Participated in community, county, regional and state agricultural fairs with educational and promotional exhibits—stressing the theme that electricity is an integral part of agriculture —that electricity is an essential factor in any successful and modern farm and home management program. It contributes directly and definitely to better farm and rural living conditions. Number participated in—27; total attendance—307,631.

17. Continued our close cooperation and support of the State Farm Electrification Councils of both states, Virginia and West Virginia, which we originally helped to set up and organize.

18. Cooperated with the Extension Services and Departments of Education in both states to foster a deeper appreciation of their programs and a better understanding of the important function of electric service in modern agriculture and rural life.

Assisted Agricultural Programs

19. Assisted with the organization and functioning of programs directed to the betterment of the economic situation of the agriculture and area in general, such as—Artificial Insemination Association, Area Rural Councils of Agricultural Workers mutually interested in the welfare of the farm and rural people and their advancement.

20. Conducted 269 meetings for 4-H Clubs attended by 9,370 members, covering such subjects as—

1. The place of electricity in the home and on the farm.
2. Understanding electrical terms and computing costs of electric service.
3. Home lighting.
4. Farm lighting.
5. Planning a home wiring system.
6. Planning a farm wiring system.
7. Making simple electrical repairs.
8. Selection, use, and care of electric irons.
9. Selection, use, and care of electric ironers.
10. Selection, use, and care of electric washing machines.
11. Selection, use, and care of electric vacuum cleaners.
12. Selection, use, and care of electric cooking equipment.
13. Electric farm water systems.
14. Poultry lighting.
15. Poultry water warmers.
16. Building an electric brooder.
17. Selection, use, and maintenance of electric farm motors.
18. Preparation and freezing of foods.

21. Assisted in the development and setting up of two approved projects in rural electrification for 4-H Club members in Virginia—also expanded our cooperation and activities in West Virginia.

Conducted Farm Meetings

22. Conducted 184 meetings and organized classes with F.F.A. and F.H.A. chapters, attended by 5973 members, covering the same subjects as set out in Item 20 above.

23. Conducted 105 meetings and organized classes with veterans covering the same general subjects as outlined in Item 20 above. Attendance—3928.

24. Cooperated with the Virginia Farm Electrification Council and Agri-

cultural Engineering Department of Virginia Polytechnic Institute in giving special *instructional short courses* to Vocational Agriculture teachers on rural electrification subjects. All present teachers in Virginia to receive training over a 3-year period.

Developed College Rural Electrification Courses

25. Helped to develop and organize the subject material for a *new rural electrification course at V. P. I.* which will be taken as a part of the regular college course the last quarter of the senior year by all future Vocational Agriculture students studying to become high school instructors of Vocational Agriculture.

26. Helped develop the material to be used in the teaching units now adopted for use by Vocational Agriculture and Vocational Agricultural Home Economic High School teachers. Suggested teaching units in Vocational Agriculture prepared by the Department of Vocational Education—V. P. I.—April 1948, carries a rural electrification section with twelve main headings and many subheadings on the subject. The main headings are:

1. The place of electricity in the home and on the farm.
2. Understanding electrical terms.
3. Home lighting.
4. Farm lighting.
5. Planning a home wiring system.
6. Planning a farm wiring system.
7. Computing cost of electric service.
8. Making simple repairs.
9. Selection, operation and maintenance of home appliances.
10. Selection, operation, use and maintenance of farm electric motors.
11. Selection, operation, use and maintenance of other farm electrical appliances.
12. Constructing electrical farm equipment.

State Rural Electrification Conferences

27. Cooperated in the planning and carrying out of state-wide Annual Rural Electrification Conferences in both Virginia and West Virginia. Served on committees in both states.

28. Developed leaflets, bulletins, slide sets, charts, etc., for use of our rural personnel, to assist in educational and promotional activities with rural youth and adults. Many of these proved so popular and practical that large quantities have been secured (in some cases, special reprints carrying their own signature line) by State Extension Service, Farm Electrification Council, Departments of Education, etc., some of which drew national recognition and acclaim.

29. Continued to conduct actual on-the-farm and in-the-home investigations and tests to establish and develop better and more practical applications of electricity for our farm and rural customers.

30. Conducted tours of farmers—organized clubs and groups to see various practices and installations on the farms and in rural territory—generally included a "stop-off" to see one of our steam or hydro plants for added interest.

31. Continued to sponsor special-emphasis company-wide activities on various uses of electricity, at which time manufacturers, distributors and local dealers tied in with radio and newspaper advertising displays and demonstrations, etc. Electric water systems and hay dryers were the subject of two such special-emphasis activities during 1948.

32. Our Agricultural Engineers continued their important work of assisting farmers in Virginia and West Virginia on the problem of eliminating a $22,000,000 annual loss in the value of their hay crop due to weather hazards at harvesting and curing time. The number of installations of hay dryers on A. E. P. Co. rural lines continued to increase to 230, a gain of 48 during the year. Work was done on curing baled hay successfully.

School Range Loan Plan

33. Unified our School Range Loan Plan on company-wide basis—program in effect in 209 schools, using a total of 277 modern electric ranges in A. E. P. Co. territory during 1948 for instruction, etc., in high school home economic departments.

34. Assisted in conducting a special training conference for Virginia Home Economics Education Supervisors, held at V. P. I. April 1948, in which they were given more information and training in teaching proper home lighting, wiring, and other electric equipment and applications.

35. Assisted in organizing and conducting demonstrations and exhibits for the two weeks of Vocational Home Economic *Teacher* Training Conferences at V. P. I., August 1948—also assisted in presentation of subject matter lectures.

36. Organized and planned "Educational Exhibits of Modern Electrical Equipment and Appliances" in cooperation with manufacturers, distributors, local dealers, and Virginia Extension officials, for the Institute of Rural Affairs at V. P. I., July 27-30, 1948. Attendance—1200 leaders from Virginia farm families.

37. "Electricity Is an Integral Part of Agriculture" was the theme of an annual dinner meeting with Extension workers, from the Virginia counties served by A. E. P. Co., held at V. P. I. August 23, 1948. There were 146 present. It is the one time each year when the Extension Agents, Specialists, etc., sit around the table with Company Agricultural Engineers, Rural Representatives, Home Economists, etc., and discuss progress since the last meeting, immediate problems in the field, future plans and programs most needed and of mutual interest.

38. Agricultural Engineers and Home Economists participated in Vocational Guidance Institute for high school students in an effort to keep students well informed of developments of agriculture, industry, education, etc.—also that they might be in a better position to intelligently select a career.

Sponsor Lamp Contest

39. Assisted the 4-H Clubs in our Virginia service area—30 counties—in a fund-raising activity to secure funds to develop the 90-acre tract of land donated by the Company in November, 1947. The Claytor Lake Camp—Lamp Activity was set up for the month of November 1948, during which time the Company acted as the jobber and banker—purchasing modern table lamps equipped with the new 150-watt Indirect-Lite bulb in large quantities and turning them over to the local 4-H Club, etc., for resale—the profits from the activity going to the Claytor Camp Development Fund at V. P. I. The Company offered incentive cash awards to the clubs selling the largest number of lamps. For each sale $1.00 went to the local club and $3.00 to the camp development fund. The clubs sold 3831 lamps, resulting in a development fund of $11,493 and $3,831 for the local clubs, in addition to 15 A. E. P. Co. cash awards totaling $405. Another example of A. E. P. Co. helping others to help themselves.

Rural Dealers Aided

40. Gave local rural dealers 49,188 live prospects for electrical equipment and appliances on A. E. P. Co. rural lines.

41. Conducted sales training courses for rural dealers in A. E. P. Co. territory.

42. Our Rural Organization conducted a total of 2505 rural meetings and demonstrations, which were attended by 100,167 interested farm and rural customers.

Electric Range and Water Heater Sales Climb

43. During 1948 there were 24,324 electric ranges and electric water heaters sold and installed on A. E. P. Co. lines, a 59 per cent increase over 1947, 11,953 of which were on *rural lines,* or *49.1 per cent of the total sales.* Local dealers accounted for 96.2 per cent of the sales, while A. E. P. Co. sales represented only 3.8 per cent.

44. Local dealers also sold and installed 31,942 units of farm and home electrical equipment and appliances, other than ranges and water heaters, on our rural lines—such as water pumps, brookers, feed grinders, hay dryers, frozen food cabinets, etc., reflecting rather conclusively the value of our rural organization's cooperation, training and encouragement program with rural dealers.

45. Sent regularly the national rural electrification magazine "Electricity On The Farm" to 9908 farm and rural customers. The dealer edition of "Electricity On The Farm" goes regularly to 495 rural dealers in A. E. P. Co. territory.

46. Furnished local weekly and county newspapers outstanding installation and operation stories with pictures of local farm and rural customers and how-they-did-it items—a well accepted and appreciated activity. Also ran regular monthly promotional ads in 37 local rural papers.

47. Our Rural Organization used 39 different educational and promotional movies and films for 472 different showings, with a total attendance of 33,704 interested farm and rural customers.

48. Plans were completed during 1948 to issue a 4-page informational paper, entitled "Appalachian Electric Farmer," starting with January, 1949 and monthly thereafter. The publication is to be issued in the interest of our customers—it will contain local success stories direct from the farms and rural homes along A. E. P. Co. rural lines, not necessarily dealing with the use of electric service. There will be many how-to-do-it and how-to-make-it articles, etc. Limited space will be used occasionally to carry information and facts about A. E. P. Co.

49. During 1948 members of our rural organization continued to take an active part in the activities of Edison Electric Institute, American Society of Agricultural Engineers, Home Economics Associations, Wiring Bureaus, Southeastern Electric Exchange, and others. In numerous cases they served on active committees and always brought back valuable information and ideas to help them in doing a better job.

50. Made organizational and promotional plans to increase the effectiveness of our rural organization's activities during the year ahead—1949—including an organization increase of 5 Agricultural Engineers, 16 Home Economists, and 19 Rural Representatives—bringing the new totals to 18, 44 and 57 respectively.

Yes—1948 was a busy year, but we are just as busy in 1949 and have been busy for many, many years—and expect to continue so. The thing that makes 1948 of especial interest is the fact that A. E. P. Co. received the coveted Thomas W. Martin Rural Electrification Award for the most outstanding rural electrification program in the nation that year. The plaque reads—*"Presented to the Appalachian Electric Power Company in recognition of its invaluable contribution to the rural life of the territory served by it through providing electric service for stimulating the improvement of the economic and cultural advantages of farm life."*

I am confident that your Companies, likewise, recognize their responsibilities in the rural areas they serve and have Rural Development Programs geared to local needs and situations. I believe you will also agree that these responsibilities and resulting programs may go further than rendering good, dependable service, and unless they are accepted and taken care of the utility may be faced with increased agitation from other groups or agencies using the taxpayers' money under the guise of working in the best interest of the customer. This approach is not confined to the electric utility field—just inquire of your doctor, insurance company, or telephone company friends what is taking place in their fields of endeavor.

Detroit Edison Opens Drive-In Office for Customers

CAR owning customers of The Detroit Edison Company in East Dearborn can now pay their bills and buy electric appliances without leaving their cars. A unique drive-in office recently opened by the company in East Dearborn, Mich., offers its customers an easy, efficient way to pay their bills, and serves to eliminate the traffic congestion and attendant parking problems around company offices at bill-paying time.

The drive-in customer office, said to be the only one of its kind in the middle west, is unique in that it also handles lamp renewals, appliance sales and repair transactions. Besides the car ports which handle the drive-in business, the new office has a large modern showroom and off-street parking space for customers who cannot complete their business at the two car ports. Illuminated photomurals, large plate glass windows and a modern fluorescent lighting system make the office both eye-appealing and distinctive.

Company officials are optimistic about the possibilities of the new office. During the course of the first day's business, the office handled 500 customers, 240 of whom were at the drive-in windows.

The Human Factor in Business

By Dr. Adam S. Bennion
Vice President, Utah Power and Light Company

An address before the 54th annual Congress of American Industry, sponsored by the National Association of Manufacturers, New York City, December 8, 1949

NOT long ago it was my privilege to judge a radio contest sponsored by The Junior Chamber of Commerce among 1260 high school students from 39 schools in my home state. All 11 finalists did a very creditable job talking to the subject, "I Speak For Democracy." The winner was a British lad in this country only a couple of years.

"Very Heaven"

Having contrasted the plenty here with the poverty there—the freedom here with the prohibition there—the beckoning call of opportunity here with the discouragement and frustration there, he stirred us with his sentiment of gratitude as he declared:

"To come from *that* to *this,* is very heaven."

This young fellow had caught a glimpse of the glory of America—a free man scenting his destiny. No one need try to sell him a package of English Socialism.

Who was it said, "Man is the only animal that *can* and *won't* think"? Surely no thinking American would give up what we enjoy here for what Europe has to offer. Only when he fails to appreciate his *birthright* of individuality and loses himself in a group whose leader promises him *security* can he be content to be socialized.

Our great difficulty lies in the fact that the unthinking man fancies he still has his freedom—he hasn't lost it yet. The sad thing is that if we wait till he has fully lost it—then it's too late to salvage it.

Does man really want to be free?
Must he fight to keep his freedom?

God and Man

Two things have always impressed me about man:

1. In the creation of the world, he marks the culmination of God's creative genius;
2. And, in that creation he was made in the image of God.

There is hope in that thought. However perplexing man may become in his dealings with other men, there is that spark of divinity on which we can hang our hope.

Man has always loomed large in the concerns of this America of ours. Here man aspired to be free. The founding fathers took particular pains to safeguard him against the tyranny of government. The echo for three hundred years in America has been the echo of free men at work—at work building the richest civilization the world has ever known. Strange that today the greatest question before this congress is how we can avoid slipping back into the governmental controls which the Pilgrims struggled so hard to surmount. And socialization can seize a country so fast once it sets in. Consider these dates:

Mar. 1, 1946 Bank of England nationalized
July 12, 1946 Coal Mining Industry nationalized
Aug. 1, 1946 Civil Aviation nationalized
Jan. 1, 1948 Inland Transportation nationalized
Apr. 1, 1948 Electrical Utilities nationalized
July 5, 1948 Insurance nationalized
July 5, 1948 Health Services nationalized

Are We Next?

A bill to nationalize the iron and steel industry is before Parliament.

The Mother Country, from whom we learned so much of our love of freedom, is a sad example through the past few years to teach us how soon man can forfeit his birthright. The seriousness of the problem before us is hinted in these words of Britain's Ernest Bevin, uttered within the year:

> "The United States will follow Britain's example and embrace Socialism."—April 15, 1949.
>
> "The United States is as much a *welfare state* as we are, only it is in a different form."—July 18, 1949.

Nor need we go to Britain for such quotes. Listen to former President Hoover:

> "Most Americans do not realize that our nation is blissfully driving down a back road at top speed on the last mile of collectivism."

Or listen to former Secretary of State James F. Byrnes:

> "We are going down the road to statism. Where we will wind up, no one can tell, but if some of the new programs seriously proposed should be adopted, there is danger that the individual—whether farmer, worker, manufacturer, lawyer or doctor—will soon be an economic slave pulling an oar in the galley of the state."

"Human Factor"

The title "The Human Factor in Business" introduces no merely academic discussion. It really strikes at the heart of our American Way of Life.

Time was when most Americans lived on the farm. Such shops as there were, were small. Men were neighbors and friends. They knew one another so well that getting on together was a simple matter.

What a difference today. Fancy being one of 200,000 employees of a single employer! Managerial relations remote—men represented by Union leaders—a wholly new set of circumstances—an entirely new atmosphere for social environment.

The "Human Factor" is today a real challenge. Even in the past quarter century, a new appreciation of human relationships has evolved. After wonderful achievements in the realms of engineering, financing, accounting, and organization, management is turning more and more to that vexing problem of getting along with one another.

Human Relationship in Business

In a brief discussion such as this, the whole scope of human relationships in business cannot even be sketched in. Think of these possibilities:

The discovery and hiring of the right kind of employees;
Their placement;
Their training;
Their promotion;
Their wages;
Their welfare; including,

Life insurance
Accident and Health Insurance
Safety and First Aid
Hospitalization
Recreation
Vacations
Sick Leave
Grievances
Retirement
Pensions
Labor Relations; including,
Collective Bargaining.

What Employees Want

Even to simplify these considerations, as Russell W. Davenport did in his article "The Greatest Opportunity on Earth" in October, 1949, *Fortune,* by pointing out that employees really want:

1. Economic Security
2. Humanization
3. Participation

leaves the field too large for our present purpose. Participation is perhaps the best key to what I want to say. Here is a wonderful opportunity for employees to join hands with management in a great common endeavor.

Industry faces a crisis. The next few years are largely to determine the pattern industry is to follow. There are many jobs to be done—but one transcends all the others. There is little sense in spending our energies on the individual tree when a great forest fire is raging. Again, England reminds us that a great conflagration can spread so suddenly.

A combined group of college men and business leaders, having been asked to name the ten most pressing problems before the nation, listed as problems one and two in the order of their significance:

1. The trend toward socialization;
2. The strife between management and labor.

Both of them involve people. Both of them center in human relationships. In both of them the human factor is paramount. Either of them is topic for hours of discussion. Let us offer briefly a point of view with reference to No. 2 and then set forth a suggestive program of action under No. 1.

Three Levels of Relationship

It is clear that management and labor can carry forward their relationships on one of three levels: (Of course, there is the Fact Finding Board, but one suspects that it is a pressure agency, not a real solution.)

The Level of the Strike;
The Level of Arbitration;
The Level of Mutual Cooperation.

All too frequently of late we have been grovelling about on the lowest level. The strike is just that. It is a method of force and coercion and appeals essentially to fear. Few men would deny to labor the *right* to strike, but its *regular indulgence* is as primitive as the constant whipping of children as a method of discipline. Everybody loses in a strike —and the end product, all too frequently, hatred between the parties involved —is a sad commentary on Twentieth Century intelligence.

Shall America just sit by and wait till time convinces the men who labor that strikes are bad business—or shall management effect better settlements where strikes are not resorted to, making it even more manifest that strikes don't pay?

Arbitration clearly reaches a higher level. But in arbitration, management and labor admit failure. Outsiders are brought in to take the deliberations out of the hands of the people really involved. More than that—men being what they are—where are arbitrators to be found with no leanings, either toward or against management or labor?

A Mutuality of Interests

Certainly the highest level is the level of a mutuality of interests. The level on which management and men are partners—friends in a common undertaking. Friends around a common table, ascertaining all available facts and applying seasoned judgment to them.

Surely, with Isaiah we need to say,

"Come, now, let us reason together."

It is to be hoped that the second half of the Twentieth Century may be marked by fewer strikes—fewer occasions for strikes—and greater enlightenment as a weapon in our human relationships.

But now let's look at the number one problem before American Industry. Is Statism inevitable? Must America follow down the trail of Britain? Can the socialistic trend be checked? If so, how?

What a sad comment upon our generation were we to stand by and watch our heritage be dissipated by political vote-getters and "do-gooders" with our grandchildren's money. How sad to forfeit our liberty for the promise of economic security.

Who Shall Reconstruct the Fabric of Demolished Government?

Listen to a great voice out of the past decry such a calamity.

"Other misfortunes may be borne, or their effects overcome. If disastrous war should sweep our commerce from the ocean, another generation may renew it; if it exhaust our treasury, future industry may replenish it; if it desolate and lay waste our fields, still, under a new cultivation, they will grow green again, and ripen to future harvests.

"It were but a trifle, even if the walls of yonder Capitol were to crumble, if its lofty pillars should fall, and its gorgeous decorations be all covered by the dust of the valley. All these might be rebuilt.

"But who shall reconstruct the fabric of demolished government?

"Who shall rear again the well-proportioned columns of constitutional liberty?

"Who shall frame together the skillful architecture which unites national sovereignty with State rights, individual security, and public prosperity?

"No, if these columns fall, they will be raised not again. Like the Coliseum and the Parthenon, they will be destined to a mournful, a melancholy immortality. Bitterer tears, however, will flow over them, than were ever shed over the monuments of Roman or Grecian art; for they will be the remnants of a more glorious edifice than Greece or Rome ever saw, the edifice of constitutional American liberty."

(From Daniel Webster's "The Character of Washington"— A speech delivered at a public dinner in honor of the Centennial Birthday of Washington, February 22, 1832.)

To stand idly by, doing nothing, in days as critical as these is to bring down upon our consciences the indictment of Dante, uttered more than 600 years ago:

"The hottest places in hell are reserved for those who, in a period of moral crisis, maintain their neutrality."

By general agreement, the most important problem before the American people today is how to check the trend toward complete socialization. Unless it *is* checked, the result is inevitable.

In the language of scripture,

"What Can WE Do To Be Saved?"

A Program of Action

Other nations have featured 5-year plans—perhaps that's what America needs—a plan designed to regenerate a true spirit of liberty and self-reliance in this land of ours.

I offer you a suggested program of action—a program which we have been following in our own Company for the

past two years in the hope that it may indicate what other companies can do.

Last year's program was dedicated to a new appreciation of Americanism—what it really means in our lives. The year's work was launched at dinner meetings for all employees and their wives. After dinner had been served we ran the film, "Of This We Are Proud," a film put out by the Kelvinator Company and certainly one of the best films yet to be produced for such a program. In connection with this film we exhibited the famous Freedom Train documents featuring noteworthy American achievements. Then we provided each employee, at suitable intervals during the year, four pamphlets:

"Good Citizen"—Published by The American Heritage Foundation

"Show Me Any Other Country . . ." by Betty Knowles Hunt—Published by The Foundation for Economic Education, Inc.

"The Free Enterprise System" by Phelps Adams—Published by the National Association of Manufacturers

"Lest We Forget" by H. W. Prentis, Jr.—Published by Armstrong Cork Company of Lancaster, Pa.

Privileges of American Citizens

As a follow-up through the year, we mailed to the home of each employee once a month one of the American Legion's outstanding pamphlets (twelve in the series), "Our American Way of Life." The purpose throughout the year's work was to make sure that our employees are aware of the privilege of being an American citizen. We stressed our historical backgrounds, our basic governmental principles and the individual's responsibility in the preservation of our heritage.

This year's work is designed to follow up the work of a year ago. It is directed more immediately to the problems confronting our own industry. It stresses the things we need to do to preserve this industry but in so doing we hope to equip our employees to discover the fallacies in the promises of the socialized state and, further, to stir them to want to do something to perpetuate our American Way of Life.

Employee Group Discussions

Ninety-two groups have been organized with approximately twenty employees to the group. A discussion leader is appointed for each group, which, during the winter and spring, will hold six meetings, one a month. Let me indicate the subjects of those six meetings.

1. A Declaration of Principles.

A clear-cut statement of the platform upon which we, as an industry, stand before the people of this nation—what we believe in—what we are prepared to undertake by way of giving good service—what we regard as our obligations to our employees, our customers, our stockholders and our communities.

2. What Our Industry Has Achieved in 50 years.

A statement of the remarkable developments of an intriguing industry—a chronicle of developments within the industry—of the extension of our service—of the regular reduction of costs of service—the place of America's electrical industry in the world.

3. The Valley Authority.

A presentation of the essential issues in a consideration of TVA and proposed valley authorities—their merits and demerits—how their operation runs counter to the genius of American government.

4. Socialism Not For the U. S. A.

The inconsistency of Americans turning back to an outmoded form of government. Plymouth Colony's experience with socialism. The universal failure of socialistic experiments. The loss of freedom and of progress under such a system.

5. To Make a Friend You Must be a Friend.

A challenge to superior service, perhaps best summed up in an attitude expressed in the phrase that "we are servants of the people and every customer should be treated as a guest."

6. This Story Must be Told.

Essential elements of the story. Media available for its telling—a responsibility resting upon each employee to do the telling—individual efforts, of course, to be supplemented by institutional advertising and community programs.

Toward A Common Understanding

These six subjects have all been carefully prepared and shall be made available through printed pamphlets to all employees. The procedure for the year involves group discussions—discussions in which problems may be raised, answers given, suggestions offered—a free give and take toward a common understanding, together with a resolution to translate this understanding into action.

Already careful and full training has been given to the leaders of these groups by the executive officers of the Company, including the president, the vice presidents, chief engineer, etc. Such preparation is intended to equip these group leaders so that they may reach out into community meetings of all kinds: Civic Clubs, Lodges, Church Groups, etc.; where they may be articulate in making clear the attitude and the aspirations of the industry as we face the most vexing problem now before us.

Employees, in turn, are equipped to do an effective job with their friends and neighbors. If every company in the industry would thus equip all employees, we should have more than a quarter of a million voices at work. With their wives, we are talking about a force of a half million people.

But even if such a program is made thoroughly effective, it is not enough. One industry cannot stem the tide which is rushing in upon this nation. And the interesting thing is that the principles at stake with power companies are exactly the principles involved in every other industry. If we are to talk about a 5-year plan, it should be a plan participated in by all the freedom-loving institutions of this land, not under one sponsorship, potent as that might be, because such a single sponsorship can be too vulnerable to attack.

Directions for National Cooperation

What we need is a common stimulation so that all institutions will respond to their civic and patriotic duties in a crisis like this, so that their efforts will be timed together. We need teamwork among institutions as we have never needed it before. And each institution needs to set up its basic principles in the light of the common fundamentals which underlie all American business. Our common threat is Socialism. What we need, on a national level, is a clearance and a set of directions for the respective institutions which center in national organizations, and then, reaching down to the local level, we need to launch in each community an honest-to-goodness Grass Roots Program covering the principles which underlie our economic structure.

Allies in National Institutions

Already there are under way movements which give new assurance that this job can be done both nationally and locally. Responses in my own state thoroughly convince me that we have some twenty major institutions either already at work or prepared enthusiastically to

join in such a movement. Time prevents setting down here procedures which have already been discussed, but the institutions listed—and they are only typical of scores of others—indicate how tremendous the scope of such a movement can be.

1. The American Legion
2. Gas and Oil Companies
3. Banks and Trust Companies
4. The Telephone Company
5. Electric Power and Light Companies
6. Insurance Companies
7. Steel
8. The Mining Industry
9. Realtors
10. Physicians, Surgeons and Dentists
11. The Press
12. Radio and Television
13. Transportation
14. Women's Clubs
15. Schools
16. Churches
17. Farm Organizations
18. Lawyers
19. Civic Clubs
20. Labor Unions
21. Manufacturers

We need not reach all of the millions involved. A vigorous group within each classification can work wonders. Germany and Russia have both taught us what a crusading minority can do. Think what the banks alone could do if they would but undertake to make their depositors fully conscious of the dangers which inhere in a money made worthless through debts which might well eventually throw us into bankruptcy.

A Job Worth Doing, That Needs Doing

Or, consider what insurance companies might and, in my judgment, ought to do by way of informing policy holders of the limitations set upon the worth of policies under a ruined economy. This group need not be reminded of what the medical men of this nation have already done—what they propose to do. The newspaper men and the radio men of the nation are fully conscious of the meaning of freedom—and the threat to it under socialistic control. The Catholic ministry has already demonstrated how potent a force the church can be. And certainly no one should be more familiar with the threats of socialism than the women of America. Out against the sunset years of their lives they look to savings in financial institutions and to insurance policies which have been set up for their protection.

Here's a job worth doing.

Here's a job that needs doing.

And here's a job that can be done.

Here's another great job for the NAM. I am aware of the outstanding work you are already doing. But America needs you to stimulate this overall program. You have the wisdom and the leadership to stir into action our whole business personnel. What a tremendous movement a few people could launch! What an opportunity for civic response. What a challenge to our love of freedom. For the task at hand means the preservation of the richest heritage ever entrusted to God's children—a heritage of freedom and of opportunity.

EEI Report Published on "Farm Electrification Research and Special Studies"

FROM barn cleaning to vegetable processing, 180 scientific projects, supported wholly or in part by electric companies, have achieved notable results in the application of time-saving, money-saving electricity to the nation's farm tasks, a recent study of farm electrification research reveals. Compiled by the Farm Section, Commercial Division of the EEI, this report of "Farm Electrification Research and Special Studies," describes more than 70 different types of farm problems that are being studied by research groups conducted or contributed to by electric operating companies since January 1, 1947.

Increased crop yields and healthier farm stock have been achieved in many of the farm experiments sponsored by electric companies who entirely support 84 of the projects. Better methods of farming and farm food processing and new uses for farm products have also been added to agricultural science in the course of these researches and special studies.

Over 50 of the 180 projects deal with the processing of farm crops and dairy farming accounts for 38. The poultry farm is concerned in 25 projects devoted to such problems as bactericidal lamps in laying houses, brooding, egg candling, egg cooling, egg-room heating, poultry house ventilation, poultry growing, poultry house floor heating, automatic water supply for poultry and water warming.

Other projects are seeking answers to problems of importance to particular local regions, such as the curing of tobacco leaf in Connecticut by controlled air distribution. Electric companies in many local areas are cooperating with land grant colleges, the USDA, or other electric operating companies, to jointly conduct 96 of these projects.

The report, entitled "Farm Electrification Research and Special Studies," December, 1949, may be obtained from the Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y., at 75 cents per copy.

Charter Granted to Pittsburgh Chapter of Electrical Women's Round Table

THE Electrical Women's Round Table, Inc. of New York granted its second associate charter to the Pittsburgh Chapter at a meeting Dec. 2 at the Hotel Sheraton, Pittsburgh, Pa.

Miss Grace Deibig, Eastern Director, Home Economics Institute, Westinghouse Electric Corp., and a member of the Executive Committee of the EWRT of New York, presented the 26 members of the Pittsburgh Chapter with their charter.

The Electrical Women's Round Table includes in its groups women employed in the electrical industry in both business and educational fields. It is the only such organization of women in the industry. The newly-formed Pittsburgh Chapter draws its membership from the so-called Tri-State area, including western Pennsylvania, parts of Ohio and West Virginia.

Officers elected for the Pittsburgh Chapter are: Pearle Waldschmidt, National Electric Products Corp., chairman; Anne Sutter, Duquesne Light Co., vice chairman; Emma Koch, West Penn Power Co., secretary, all of Pittsburgh; and Virginia Pierson, Pennsylvania Power Co., New Castle, treasurer.

Twenty-Five Years of Farm Electrification in Retrospect

By John W. Coverdale

First Chairman of the National Committee on the Relation of Electricty to Agriculture

An address delivered at the celebration of 25 years of Farm Electrification in Wisconsin, Ripon, Wis., November 8, 1949

IN LOOKING BACK, it is not difficult to see that rural electrification, as a great national movement, had to wait upon the establishing of generating and distribution facilities which insured 24-hour service for practically every town and city of 1,000 or more population. It was necessary to build the electrical foundation for generation and primary distribution of electricity before the great network of rural lines could start to spread over our farming regions.

This electrical foundation was about completed in the early 1920's, and, as this was the foundation for rural electrification, it is easy to see that farm electrification on a national scale could not start prior to that time. However, as soon as this foundation had been laid, the electric operating companies of the nation and farm organizations began seriously to study the question of extending electric service to the farms of this nation.

The Basic Problem

Early in the twenties it was recognized that while farmers wanted electric service and officials of power companies desired to render service, the results then being obtained were not satisfactory. The cost of delivering the small amount of electricity required for the farm home was excessive. The farmer thought he could not afford to pay even the amount necessary to cover delivery costs, and the power companies could not afford to extend lines and render service for the low revenue then apparent.

It became clear that if electricity was to become a part of country life, the volume of energy use must be developed so that it would be profitable and practical to both producer and consumer.

I happened to be executive secretary of the American Farm Bureau Federation at this time, and I can well remember the early conferences between representatives of the National Electric Light Association (the national association of the electric operating companies) and the Farm Bureau Federation. These meetings were held in the Chicago offices of the Farm Bureau. I believe I sat in on all of these early conferences.

Cooperation Essential For Success

Farm electrification, in its complete sense, was more than an electrical problem, as the electric companies soon found out when they started to enter the field of farm electrification. It was more than an agricultural problem, as the farm experts soon found out when they began working on it. Everybody discovered that it was a problem that required the joint study and cooperation of the farm experts, the electric operating companies, the manufacturers of farm and electrical equipment, and others. Needless to say, it was not to be expected that either agriculture, the electric light and power industry, or any other group working alone could produce maximum results at minimum development expense on this problem. Cooperation was essential for ultimate success.

C.R.E.A. Organized

To promote this cooperative work, the American Farm Bureau Federation and the National Electric Light Association organized the Committee on the Relation of Electricity to Agriculture, which commenced active work on August 1, 1923. It was the function of this cooperative organization to give purpose and direction to a national movement looking toward the solution of the problem of getting electric service at work on the farms of the United States. The original committee was composed of representatives from the following organizations: American Farm Bureau Federation, National Electric Light Association, Power Farming Association, American Society of Agricultural Engineers, U. S. Department of Agriculture, United States Department of Commerce, and the United States Department of the Interior. The committee was later expanded and included a number of prominent organizations, all of which were interested in farm electrification.

After a few meetings, this committee realized that a great deal of research would have to be conducted to determine the best way of applying electric service to the farm. At that time the farmers' machinery and equipment was designed to be run by windmills, gas engines, horse power, or human power. It was felt that a whole new line of equipment had to be designed and manufactured, which would be best suited to electric power with all of its automatic features and controls. Inasmuch as it would have been very expensive to set up a separate research department, it was decided to make use of the research facilities that were found in most agricultural colleges and experiment stations. This had the advantage of getting a lot of men at work quickly on the problem.

State Organizations Created

Realizing that the rural electrification problem varied with the types of agriculture found in different parts of the United States and, further, that local initiative constituted the foundation from which progress could be expected, the national committee directed its efforts chiefly toward the formation of state organizations similar in makeup to the national committee but with the primary purpose of instituting and executing investigations which would unearth the possibilities and practicabilities for the use of electricity on the farm. These state organizations were created in 25 states, and Wisconsin, one of the 25, had a very active part in this whole research activity.

It was my lot to be chairman of the National Committee on the Relation of Electricity to Agriculture during the early years of its existence, and so I had a chance to observe the workings of the national and state committees. We em-

ployed a highly trained agricultural engineer by the name of E. A. White, who spent his whole time working with the research people at the various state agricultural colleges and experiment stations, promoting new research projects in each location, assisting wherever he could, and then seeing to it that wide publicity was given to the results of each research project completed. This was handled by the national committee, through the sending out of thousands of news letters. These were sent to county agents and to organizations that were interested in the progress of the research work on farm electrification throughout the nation. Dr. White made a real contribution to rural electrification through the work he did for this committee.

Results of Farm Research

This research work continued for years. Among the results is the present type farm electric line, which costs much less to build than similar lines in the urban areas. Many new lines of machinery were developed which did the farm work better and which cost less to install and less to operate. Farm methods were changed in many respects so as to bring about higher efficiency. In my opinion, the work of the people who were on these committees and who cooperated with them made farm electrification possible and advanced its time of completion many years. They also aided in preventing farmers from installing improper equipment in an improper manner and thereby wasting a lot of money for which they got nothing. The work could probably have been done better than it was done, but, from where I sat, I know that it was an outstanding job in guiding the bringing of a new form of power to the agriculture industry.

The farmers of this nation may not now realize how important to them this early cooperative research work was and still is in giving them a more satisfactory electric service for more jobs, at a lower cost per unit of work done.

25 Years of Progress

At the time we started this research work, only a very few farmers had electric service. Today 85 per cent of the occupied farms in the nation have electric service, and it is available to about 90 per cent. By available I mean the lines are within one-quarter of a mile of the farms. To me it is amazing that in a period of about 25 years, electric service has come to nearly all of the farms of this nation. It was a task that called for the expending of billions of dollars for generating plants, transmission lines and distribution systems. It required the farmers to spend billions of dollars for wiring, equipment and machinery. All this money has been spent, the property bought and built, and, as far as I can determine, the electric service is quite satisfactory to the user and to the producer.

I know of no other development of this magnitude that was accomplished in such a short time and in such a satisfactory manner, and I want to repeat that the early cooperative work of the electric operating companies, the farm organizations, and others deserves a great deal of credit for this accomplishment.

You here in Wisconsin can be proud of the leadership in this early work by the University of Wisconsin. I remember especially some of the excellent work done in the development of a small hammer mill. Professor Duffee's picture appears alongside of others in one of the very first bulletins gotten out by the National Committee on the Relation of Electricity to Agriculture. The Agricultural Engineering Department of the University of Wisconsin was one of the big contributors to this early research work mentioned before.

Ripon Experimental Line

Prof. Duffee and his men did a lot of effective work on the experimental line built out of Ripon in 1924. They helped the farmers make installations of electrically-driven equipment. They collected valuable information through putting meters on every piece of equipment, having the meters read regularly, cooperating in every way with the farmers in trying to improve such installation. This information, together with information from other colleges, was used by manufacturers and others in bringing out better and more acceptable equipment.

You in Wisconsin can well feel proud of the part you played in bringing about this very important development. The fact that you are celebrating here today the connection of 100,000 farm customers to the lines of the electric operating companies shows that the companies have been active in extending lines to farmers and also it gives us a measure of the huge job done. If to this 100,000 we add the 57,000 farms served by cooperatives and 8,000 more served by municipal utilities, it is evident that the farms of Wisconsin are electrified or have electric service available.

Since the REA co-ops were not organized until after 1936, most of the research work and early cooperative work that was so important to this farm electrification development was done before they started. Therefore, the electric operating companies, not the REA co-ops, are the ones that took an active part and contributed so much to the development of farm electrification in the pioneering days of the 1920's. Nevertheless, the early work done by the National Committees and the research work conducted by the agricultural colleges, manufacturers and others, is of just as much value to the co-ops as it is to the operating companies. The advances made in learning how to electrify farms before 1936 have helped to speed up the serving of farms by cooperatives in the same manner as they have helped to serve the farm customers of electric operating companies. The work done here at Ripon and on similar lines in other states was of fundamental and basic value to farm users all over the United States, regardless of who furnished the electric service.

What Electricity Means to the Farmer

I wish to congratulate you all on this 25th birthday of organized rural electrification in Wisconsin and in the United States and also to congratulate you on the connection of 100,000 farm customers to the lines of the electric operating companies in Wisconsin. Good electric service means a great deal to a farmer. It provides for him not only electric light and power, but it also gives him a substitute for the water main and the gas main.

Electric service enables him to install an automatic water supply, which gives him running water wherever he wants it, and enables him to have all the advantages of his city cousin. Electric cooking and water heating have developed to the point where they make gas water heating and gas cooking unnecessary. Electricity puts in the hands of the farmer the tools which he can use to materially raise the standard of living that prevailed prior to the 1920's. It enables him to operate his farm with less help or to operate a bigger farm with the same help, both of which are very valuable to him.

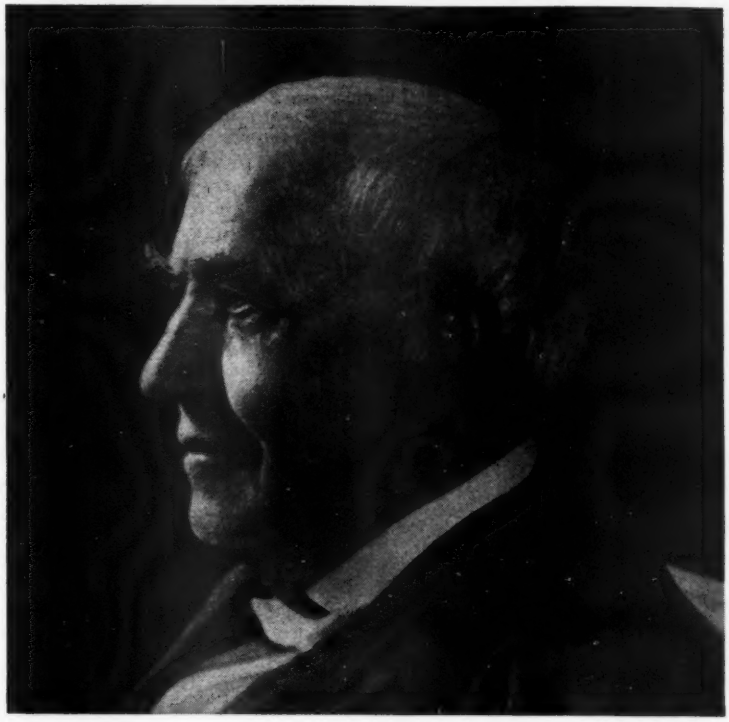
A Great National Development

I am certainly glad to see that the farmers of this nation have arrived at the point where they have electric service available, and I am very proud of the fact that the American Farm Bureau and the State Farm Bureau Federations have had, from the very start, an interesting part in this great development.

Thomas A. Edison
"A Man of the Half-Century"

Editors' Poll Places Edison Among Top Ten Personalities of Half Century

IT should be a source of considerable pride and inspiration to the electric industry that Thomas A. Edison ranked third in a recent United Press poll conducted among American newspaper and radio editors to determine the 10 personalities having the greatest impact on the first half of this century, affecting the most persons and to the greatest extent.



Leading the tabulation were Franklin D. Roosevelt and Adolf Hitler, in that order, representing the two principal antagonists in the most destructive war in history. (It was noted as a condition of the poll that the influences exerted by those nominated could be for either good or evil.)

Following Mr. Edison was Winston Churchill, the third political and wartime leader to be included on the list. Then came Henry Ford, Nikolai Lenin, the Wright Brothers, Albert Einstein, Josef Stalin, and Louis Pasteur.

Perhaps the most significant feature of the poll, for the electric industry, is the continuing importance attached by the editors to Edison and his achievements. The great inventor has been dead for nineteen years—a period which included economic chaos and World War II. Yet despite the tremendous changes wrought by these events in the world's outlook and mode of existence, despite the rapidity with which today's headlines obscure historic figures of yesterday, Edison's brilliance remains undimmed and unchallenged.

There is also heartening evidence in the poll that the means by which he made these contributions—individual initiative, ingenuity and perseverance, functioning in an economic and social atmosphere conducive to their development — have not lost their attraction for Americans.

This is borne out by the positions accorded to Henry Ford and the Wright brothers, who, with Edison, initiated some of the most revolutionary changes benefiting the world today. As in Edison's case, their primary achievements came long before the principal political leaders reached their greatest eminence. Ironically, with the exception of Lenin, the political figures whose greatest powers were roughly contemporaneous with Edison's period of greatest activity are not represented.

Thirty-seven years ago, when the *Independent Magazine* conducted a poll, Mr. Edison found himself in illustrious, but entirely different, company. Early in 1913, the *Independent* asked its readers: "Who are the most useful Americans. . . . In other words, who among our contemporaries are of most value to the community?" The *Independent* noted that when the returns came in they "had over 10,000 names to count and that 343 different persons had been considered worthy of the honor of being included on the list of the 10 most valuable citizens of the United States."

Thomas A. Edison led the poll by the widest margin recorded in the tabulation. His name appeared on 87 per cent of the lists sent in. Following in order were: Jane Addams, Andrew Carnegie, Theodore Roosevelt, Helen Gould Shepard, Alexis Carrel, George W. Goethals, William Jennings Bryan, Woodrow Wilson, and Luther Burbank.

One of the voters in the 1913 poll, who may have been gifted with a pro-

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When asked at the turn of the century if he thought that the achievements of the 20th Century would surpass those of the one just closed, Mr. Edison said:

"They certainly will. In the first place, there are more of us to work. Second, we know more. The achievement of the past is merely a point of departure and you know that in our art, 'impossible' is an impossible word."

—Cosmopolitan Magazine, May 1902

The Spirit of the "Dead-End Kids"*

By Thomas W. Phelps

Assistant to Chairman of the Board of Directors, Socony-Vacuum Oil Company

Excerpts from an address before the forum luncheon of the Traffic Club of New York, November 16, 1949

PRIVATE enterprise in transportation is in grave danger. That concerns me, because I believe private enterprise in transportation is essential to private enterprise in production and in marketing.

Kipling evaluated your business in three words: "Transportation equals civilization." At first that may sound like poetic license. But it is my opinion that if we understand transportation to mean all kinds of transportation, Kipling was literally correct. All kinds of transportation include the transportation of passengers as well as of freight, and the transportation of information and ideas as well as of coal and iron. Thus broadly viewed, our transportation agencies include not only railroads, motor truckers, inland and coastal waterways, air lines and pipe lines, but also telephone companies, cable, radio and television companies, and electric power lines. With a few exceptions such as government-owned power lines, barge lines and city transit lines, all those various transportation agencies are still in private hands. Why, then, should we worry?

Competition in Transportation

Because our legislators and our bureaucrats are still acting as if transportation were a monopoly to be curbed in the public interest instead of recognizing the obvious fact that it has become highly, even viciously, competitive.

Actually you know that if coal is burned at the mine to produce electric energy for a town 50 miles away a transportation job is being done just as surely as though the coal were being hauled 50 miles to the town before being transformed into electric energy. You know that the messages that go by telephone represent transportation just as much as those that go by mail, and that the news pictures you see on your television set represent transportation just as much as those brought to you in your daily newspaper, your weekly picture magazine, or your local movie theater. . . .

*Reprinted with permission from *Railway Age*, December 24, 1949.

"I don't know enough about transportation to say or even to imply that the answer to all those questions should be "No." I do say that if your answer is "Yes," you are encouraging the government-do-everything camel to put his nose into your private-enterprise tent, and there won't be room for you both. But how about the other approach — that is, instead of trying to get subsidies for yourselves, trying to have the government place new burdens on your competitors to equalize those you are carrying? I know that misery loves company, but I also know that every new tax burden imposed on one industry becomes a precedent for imposing a still bigger one on the next."

What worries me is that at a time when we face an organized effort to wipe free enterprise from the face of the earth, some of us may play into the hands of our common enemy by lashing out at each other instead of recognizing that the real cause of our distress is a combination of technological progress and political decadence. We must not fall into the error of the henpecked husband who bore his wife's upraiding in silence, then walked out of the room and kicked hell out of the cat.

The first essential, it seems to me, is to adopt throughout your industry the spirit of the "dead-end kids." Compete as hard as you want to, but never, never invite outside interference except to punish those who break the rules. If such interference comes without an invitation, as it has and will, join forces to throw it out. Don't be shortsighted enough to rejoice when the government imposes a competitive disadvantage on one of your rivals. You and I know that there are some selfish interests (and I'm not thinking of the same people Mr. Truman has in mind) who would like to see the government take over the railroads. Every time any transportation agency appeals to government for help in its competitive struggle with other transportation media, it plays into the hands of those who would make governmental bureaus of all transportation agencies. It is a dangerous fallacy that if the government aids one form of transportation it should aid all forms of transportation to be "fair." Two wrongs don't make a right, never did, and never will. The fact that some transportation media benefit incidentally as a result of government action taken for other reasons is no more ground for demanding similar benefits for all transportation media than is any other windfall in any other industry. Should railroads and trucks be subsidized to compete with inland waterways improved at government expense primarily to prevent floods? Should railroads and water lines be subsidized to compete with trucks rolling over highways built to serve the convenience of tens of millions of private automobile owners? Should trucks and water lines be subsidized to compete with those few fortunate railroads which have struck oil on their right of way? Should all three be subsidized to compete with pipe lines, with air lines, with power lines, with the telephone and television and other new forms of transportation not yet dreamed of?

Establishing Dangerous Precedents

I don't know enough about transportation to say or even to imply that the answer to all those questions should be "No." I do say that if your answer is "Yes," you are encouraging the government-do-everything camel to put his nose into your private-enterprise tent and there won't be room for you both. But how about the other approach—that is, instead of trying to get subsidies for yourselves, trying to have the government place new burdens on your competitors to equalize those you are carrying? I know that misery loves com-

(*Continued on page* 31)

Problems of Safety Relating to the Operation and Maintenance of Electrical Equipment in Stations and Substations

By Nelson E. Brown

Superintendent of Substations, Buffalo Niagara Electric Corp.

A paper presented at a meeting of the Electrical Equipment Committee, EEI, Schenectady, N. Y., October 3, 1949

EACH year in the Electric Light and Power Industry more than one hundred employees are killed and about six thousand more are injured, more or less seriously. The Accident Prevention Committee of the Edison Electric Institute has been collecting detailed reports of the fatalities within the Industry since 1941. For the seven year period, 1941 to 1947 inclusive, 835 fatalities have occurred. This is not a good record, for our Industry's severity is worse than the average for all industries. Steel mills have better records than the electric industry. Only such industries as construction, quarrying, lumbering and mining are worse.

How many of these fatalities and injured men were from your company? How many cases do you know about personally? These deaths form a loss to the employee's family, measured by grief, and a loss to the companies of skilled workmen and an economic loss estimated at from four to five million dollars per year.

The prevention of accidents to employees while working at stations is a serious problem worthy of the best efforts of engineers and operating men. Fatalities at stations are second only to those occurring in connection with the work on poles. During these seven years, 248 of the fatalities reported occurred at stations. This is 30 per cent of the total.

166 Fatalities at Stations

One hundred sixty-six lives were lost due to electric shock or burns while working at stations on or around bus structures, switches and equipment. Eighty-two more men were fatally injured at stations by accidents not associated with electric shock; such as, falls, steam burns, or being struck by flying, sliding, falling or other moving objects, and miscellaneous causes. These cases have been carefully classified, giving facts concerning *how* the accidents happened. When this data, representing the summation of millions of manhours of experience, is analyzed we form definite opinions about *why* the accidents happen.

The problem is to keep the accidents *from* happening. Basically the prevention of accidents is an operating function, a job for the operating men. Some portion of this responsibility should be shared by designers, engineers, and executives. Fortunately, groups such as this are showing an increased interest in the prevention of accidents.

Safety Problems in Stations

What are the problems of safety relating to the operation and maintenance of electrical equipment in stations and substations? To illustrate some of these problems I would like to give the details of an accident which occurred at our Huntley Generating Station. The employees involved are very conscientious by nature and have had many years of experience and training in electrical operation and maintenance at this steam plant.

An Incident at Huntley Station

Recently at our Huntley Generating Station a periodic test of breaker operations by our relay test group indicated that certain 440-v air circuit breakers were sluggish in their operation. Soon, thereafter, on off-peak time the Watch Electrician and the Station Shift Foreman decided to lubricate the pins of the air circuit breakers. They started on the breaker associated with Generator No. 7. On this particular breaker there are no disconnects, so it was practically impossible to totally isolate the breaker. The breaker was in an open position which meant that the stationary contacts were deenergized but that the movable contacts were energized from the House Service Bus. The electrician put on his rubber gloves and using a small oil can proceeded to reach in between the phases of the breaker and lubricate the front and back pins. The clearance between phases is about five inches. He successfully completed the work on this breaker.

Narrow Clearances

These men then moved along the line to the breaker associated with Generator No. 6. This breaker had disconnects which would have isolated the breaker but which they did not use. The work was again successfully completed and they moved along to the breaker associated with Generator No. 5. Isolating disconnects were again provided but were not used. On this breaker the clearance between phases was about three inches instead of five inches as on the previous breaker. This decreased clearance and consequent increased hazard should have made this particular operation prohibitive. While attempting to lubricate the pins between Phase 2 and Phase 3, the electrician caused a phase-to-phase short through the medium of the oil can. The pitting on the sides and front of the breaker due to the arch were plainly visible. What extinguished the arc is open to conjecture.

One possibility is that in reaching through the movable contacts to perform the operation and in trying to get away at the time of the arc he actually snuffed out the arc by pulling the can down and away from the breaker. That the subsequent damage both to the equipment and to the employee could have been far more serious is not even debatable. The foreman was not affected by the flash, he was checking an auxiliary switch at the time and was so positioned that he was not vulnerable to the flash. The electrician was not seriously injured.

This is one more instance where we have been most fortunate in injury results in relation to the potential hazard. The electrician was wearing safety spec-

tacles provided by the company. Copper particles were embedded in the glass of both lenses. The unsolicited opinion of the doctors concerned was that the employee would have lost his vision if he had not been wearing safety glasses.

Why?

Why did these experienced men attempt this hazardous feat? Why did they not use the disconnects which were available? Is this case unusual or do accidents following this pattern occur frequently? In order to shed some light upon these problems I would like to return to the statistics and facts compiled by the Accident Prevention Committee.

In analyzing this data we find that in station work each slip or fall or mental lapse is likely to be fatal if the workman is near enough to contact energized parts. This means that if the workman uses poor judgment and depends upon his alertness, balance, and skill instead of providing adequate clearance or barriers it is certain that sooner or later his luck will run out. A majority of all the cases require that some action be taken which will make station maintenance work as foolproof as possible.

What action can we take to make it practically impossible for the station operators and maintenance men to get into trouble? The facts indicate that we should concentrate our efforts toward this ideal station where the employee cannot be hurt.

Metalclad Switchgear

The use of metalclad switchgear with draw-out breakers has been a big step in the right direction. It keeps energized parts out of reach and prevents accidental contact by careless workmen during normal operation and by experienced workmen during abnormal situations.

This modern switchgear provides interlocks to prevent switching errors and completely isolates the breaker for maintenance work. Unfortunately we do not have all modern switchgear. It will be years before existing gear with inadequate clearance can be eliminated. We can, however, economically eliminate obvious hazards such as disconnecting switches whose blades are alive when hanging down in the open position. We can simplify some of our circuit diagrams to eliminate unusual connections previously considered necessary.

When equipment needs maintenance or repair the workman is entitled to ample elbow and head room with adequate clearance from adjacent circuits. If these provisions are not given by a good clean-cut design then accidents are more likely to occur. It is natural for operating men to strive for continuity of service. They plan their work so that there is the minimum duration of interruption of service to as few consumers as possible. These criteria tend to cause jobs to be undertaken when more prudent judgment would require adequate working clearances to adjacent circuits.

Portable Substations

The record clearly shows that many workmen have been killed while performing hazardous jobs in order to maintain service. Hazardous jobs such as using a hack saw on live bus bar, connecting or removing jumpers to live busses imply the need for designs which provide for additions or changes without such hazardous work. One solution to this need is to provide portable substations so that maintenance, changes or additions can be made to circuits and structures while the portable substation provides service to consumers.

Design to Eliminate Mental Lapse

Further study of the record of station accidents shows that many fatalities are due to a mental lapse of the employee. In these cases the workman fully understands the procedures and the hazards in adjacent areas, however, some distraction occurs which causes him to forget where the danger lies. Sometimes the workman is so intent upon finishing the job in a fine workman-like manner that he forgets the hazards that he knew so well when the job was started. Designers should recognize this human failing and provide barriers so obvious that even though a mental lapse occurs the workman will not be injured. Operating men can provide safety watchmen, danger signs, flags, portable barriers, et cetera. It is important that the de-energized circuit be set apart, clearly identified from all the adjacent circuits that are usually identical.

Only a few accidents are due to improper tools or to their improper use, nor are many accidents due to the failure of electrical equipment to perform properly. It is, therefore, possible to greatly reduce the number of station accidents without extensive changes in the present designs.

Most operating companies have written operating procedures that require the circuit to be worked on to be either tested or grounded or both before workmen are allowed to touch the circuit. The simple rule of testing at the point of work before touching conductors would have saved at least twelve lives during this seven-year period if it had been universally adopted and enforced.

Designers Should Foresee Difficulties

Additional lives can be saved if we have all stations surveyed to insure that air break switch handles of outdoor structures are properly grounded. If designers would put themselves in the operating man's shoes and thereby understand the situations he is confronted with, particularly at times of abnormal conditions, improvements would surely be the result. The operating men called upon for repair work are perhaps confronted with improvised lighting, damage of greater extent or of different nature than expected. Designers should foresee these difficulties so that poor working conditions and unnecessary hazards are not caused by design.

Last year thirteen more fatalities due to electric shock occurred at stations. A successful safety program depends upon a spirit of cooperation. As an operating man, may I appeal to you as engineers and designers and executives to put forth your best efforts to prevent accidents in stations. I wish to acknowledge the fine cooperation that I have received from the Safety Department of our company.

Midwinter Conference of Public Utility Buyers' Group

THE Public Utility Buyers' Group of the National Association of Purchasing Agents will hold its Nineteenth Annual Midwinter Conference, at the Hotel Statler, Detroit, Feb. 13 and 14.

The Conference is designed to further alert utility buyers to the potentialities for good buying in today's market. They will get latest information on commodities and basic economics from outstanding leaders in these fields. They will also exchange their own ideas and experiences in a session devoted to "The Purchasing Work Shop."

All utility buyers and others who have a legitimate interest are welcome to attend this Conference.

Fourth National Farm Electrification Conference Held at Chicago, December 20-22

MORE than 400 delegates to the Fourth Annual National Farm Electrification Conference at Chicago, Ill., Dec. 20-22, who formed a national cross-section of industry, educational institutions, agricultural engineering, electric power suppliers and retail and wholesale business, attended four profitable sessions in a varied program devoted to the objective of bringing together in conference "individuals and groups interested in raising farm living standards and reducing costs by increasing the profitable uses of electricity on farms."

Many Chores Still Done the Hard Way

Recognizing that the job of electrifying the nation's farms is now 85 per cent completed, many of the speakers on the program advocated extending the horizons of farm electrification by an intensive search for new ways of fitting electric machinery to farm tasks.

Declaring that "Sixty per cent of the farm chores are still done the hard way —by hand," the chairman of the Conference, H. P. Rusk, dean and director, College of Agriculture, University of Illinois, in his conference-opening speech stated that, "The big job ahead is to find and develop new ways of making electricity contribute to labor efficiency, reduced cost of farm operations, and higher living standards."

Dr. Sanders Elected Chairman

Dr. P. D. Sanders, Master of the Virginia State Grange and editor of the *Southern Planter Magazine,* was elected to succeed Dean Rusk as chairman of the National Farm Electrification Conference in 1950. Other officers elected at the concluding session of the Conference were: Walter Deming, treasurer, Deming Pump Co., vice chairman; R. J. Gingles, manager, Farm Electrification Bureau, NEMA, secretary; and K. H. Gorham, business manager, *Electricity On The Farm* Magazine, treasurer. The following regional vice chairmen were named: Northwest—W. C. Krueger, extension specialist, Agricultural Engineering, Rutgers University; Northwest—C. J. Hurd, President, Hurd Farm Electric Supply Co., Spokane, Wash.; Midwest—E. E. Slusher, President, Missouri Farm Bureau Federation; Southwest—Ross Mauney, Agricultural Engineer, Arkansas Power and Light Co.; and Southeast—C. E. Seitz, Head, Agricultural Engineering Dept., Virginia Polytechnic Institute.

A Backlog of Business

In the keynote speech, delivered at the first session, Dr. Sanders declared that "The mechanization and the electrification of American agriculture represents a backlog of business which is big enough to keep our economic machine running full blast for years to come.

"Today," he said, "85 per cent of the farms of America have the blessings of electricity. The farmer has become one of the greatest consumers of electric energy, the major factor in making agriculture the new frontier of electric power. Last year the average farm customer used 1997 kwhr of electricity and paid $65.90 for the service. On the other hand, his 'city cousin' used only an average of 1563 kwhr of electric power and paid an electric bill of $47.05.

Research and Education

"But, electricity has come so suddenly to the rural scene that the farmer has not yet adapted it to the extent that it is being used in industry. The great job that lies ahead for the electrical industry is research and education. This entails the development of electrical appliances adaptable to agriculture and an education program to sell the farmer on their uses."

Hitting hard at what he termed "quack farm program schemes," Hassil E. Schenck, President of the Indiana Farm Bureau, said that all too much emphasis is being placed on support prices. Rural electrification, he continued is "digging the farmer out of the woods," and is a far more constructive part of the present and long-range farm program than presently advocated "perpetual motion" agricultural plans.

The cooperation of town and city residents and that of neighboring communities is needed to plan a better way of life for the farmer, according to Paul A. Miller, extension rural sociologist, Michigan State College. "Farm people," he said, "have had their ups and downs like the rest of us, but on the whole progress has been made on all fronts. We have seen farmers move from a time when recreation and play was considered almost 'sinful' to the present day when they can wield a real '5 iron' on the sixteenth hole. And Mrs. Jones now is winning more and more arguments as to whether it will be a new refrigerator or a new cultivator."

Farm Living Standards Raised

Knox T. Hutchinson, Assistant Secretary of Agriculture, reviewed the lasting effects of farm electrification on the rural life of America. "Farmers are glad to turn to electricity to do as much of their back-breaking work as possible," he said.

"One of the by-products of rural power is the raising of farm family living standards. Electricity has contributed to a healthier, happier farm family life. This has led to a more stable farm tenure, a longer-term interest in the land and a desire to develop conservation practices that will make and keep farms productive."

Chemurgy, Sales and Planning

Other speakers who addressed the conference were: J. W. Ticknor, assistant to the president, National Farm Chemurgic Council, who gave an account of the new cash crops for farmers created through the application of chemurgy to agricultural products; A. M. Young, member of the Sales Analysis Institute, Chicago, Ill., who spoke on the "Challenge To Inform, To Sell, and To Service"; and B. G. Perkins, Doane Agricultural Service, Inc., St. Louis, Mo., who gave a talk on "Electricity in Our Farm Management Planning."

Panel and round-table discussions were held on several important topics, including: the problem of "Getting Information for Planning to the Farm Family," which was led by K. F. Warner, extension specialist, USDA; and

(*Continued on page* 32)

Operating Statistics of REA Cooperatives Operating Distribution Systems During Calendar Year 1948

Excluding Inter-System Sales—77.6 Per Cent of Customers are Farms

	-----Dec 31, 1948-----			----------Year 1948----------				
	Miles Line	Number of Customers	Cust per Mile	Kwhr Billed (000)	Avg No. Customers	Kwhr Year	Gross Revenues	Avg per Kwhr
U S TOTAL	754,249	2,494,413	3.31	4,124,292	2,258,605	1826	$142,392,431	3.45¢
Maine	452	1,818	4.0	1,214	1,675	725	74,419	6.13
New Hampshire	1,650	4,776	2.9	4,115	4,515	911	216,908	5.27
Vermont	1,632	4,756	2.9	7,748	4,491	1725	312,310	4.03
NEW ENGLAND	3,734	11,350	3.04	13,077	10,681	1225	603,637	4.62
New York	1,555	4,108	2.6	7,862	3,968	1981	314,330	4.00
New Jersey	460	2,221	4.8	4,011	3,114	1897	147,165	3.67
Pennsylvania	13,346	50,066	3.8	75,674	47,850	1582	3,026,975	4.00
MIDDLE ATLANTIC	15,361	56,395	3.77	87,547	53,932	1623	3,488,470	3.98
Ohio	25,255	101,102	4.0	202,228	97,493	2074	6,983,587	3.45
Indiana	31,253	117,466	3.8	201,341	110,021	1830	7,359,137	3.66
Illinois	31,559	95,203	3.0	163,169	88,106	1852	6,604,426	4.05
Michigan	12,343	49,579	4.0	75,559	46,790	1615	2,923,850	3.87
Wisconsin	23,613	66,033	2.8	122,072	62,056	1967	4,899,739	4.00
EAST NO CENTRAL	124,023	429,383	3.46	764,368	404,466	1890	28,770,739	3.76
Minnesota	51,528	124,745	2.4	258,883	115,010	2251	10,437,101	4.03
Iowa	43,441	109,482	2.5	228,873	102,561	2232	8,954,363	3.91
Missouri	37,861	131,589	3.5	208,033	121,580	1711	7,458,899	3.59
No Dakota	13,819	20,149	1.5	33,962	15,953	2129	1,440,852	4.24
So Dakota	9,806	21,207	2.2	31,244	17,192	1817	1,348,748	4.32
Nebraska	21,425	47,063	2.2	97,549	42,040	2320	3,460,238	3.55
Kansas	21,078	42,391	2.0	57,026	36,395	1567	2,664,087	4.67
WEST NO CENTRAL	198,958	495,626	3.50	915,570	450,731	2031	35,764,298	3.91
Delaware	1,273	4,929	3.9	8,444	4,448	1898	344,990	4.09
Maryland	3,569	16,585	4.6	31,512	14,730	2139	1,209,088	3.83
Virginia	16,610	59,189	3.7	72,740	53,620	1357	2,939,339	4.04
West Virginia	642	2,632	4.1	2,445	2,495	980	112,921	4.62
No Carolina	24,534	98,597	4.0	88,016	87,136	1010	3,856,652	4.38
So Carolina	18,112	72,272	4.0	68,888	64,764	1064	2,754,432	4.00
Georgia	39,831	159,316	4.0	179,719	140,946	1275	6,219,005	3.46
Florida	10,414	34,751	3.3	45,221	30,730	1472	1,796,560	3.97
SO ATLANTIC	114,985	448,271	3.90	496,985	398,869	1246	19,231,995	3.87
Kentucky	25,233	107,564	4.3	126,982	94,307	1346	4,905,317	3.86
Tennessee	23,258	163,365	7.0	492,587	146,622	3360	8,907,876	1.81
Alabama	20,471	93,051	4.5	183,324	80,330	2282	4,027,750	2.20
Mississippi	26,743	122,827	4.6	170,301	110,700	1538	5,197,270	3.05
EAST SO CENTRAL	95,705	486,807	5.09	973,194	431,959	2253	23,038,213	2.37
Arkansas	20,480	77,171	3.8	67,651	68,242	991	3,047,194	4.50
Louisiana	14,451	57,732	4.0	45,712	51,732	883	2,256,396	4.94
Oklahoma	28,251	69,510	2.5	77,158	62,510	1234	3,779,830	4.90
Texas	85,483	217,436	2.5	258,621	195,018	1326	10,340,492	4.00
W SO CENTRAL	148,665	421,849	2.84	449,142	377,502	1190	19,423,912	4.32
Montana	10,293	20,991	2.0	46,790	18,557	2521	1,737,625	3.71
Idaho	4,139	10,585	2.5	24,720	10,017	2468	717,284	2.90
Wyoming	3,964	8,458	2.1	23,873	7,770	3072	889,548	3.73
Colorado	12,244	36,522	3.0	75,743	32,867	2304	2,940,412	3.88
New Mexico	4,023	11,085	2.8	33,962	9,538	3561	962,792	2.83
Arizona	1,119	6,542	5.8	18,628	5,256	3544	555,830	2.98
Utah	1,118	3,105	2.8	6,115	3,020	2025	224,791	3.68
Nevada	147	682	4.6	5,880	676	8698	89,085	1.52
MOUNTAIN	37,047	97,970	2.64	235,711	87,701	2688	8,117,367	3.44
Washington	8,627	19,625	2.3	83,252	18,416	4521	1,618,614	1.92
Oregon	5,346	18,820	3.5	65,787	17,248	3814	1,449,639	2.20
California	1,798	7,317	4.1	39,659	7,100	5586	885,547	2.23
PACIFIC	15,771	45,762	2.90	188,698	42,764	4412	3,953,800	2.10

Source: Computed from Annual Statistical Report of the REA for 1948.

Average Price of Electric Company Power Sold to REA Co-ops Is 37 Per Cent Under Generating Co-op Charge

THE adjoining table, computed from the Annual Report of Energy Purchased by REA Borrowers, published by the Rural Electrification Administration, shows the kwhr bought and amounts paid for electricity during the fiscal year ended June 30, 1948. REA Co-ops paid 1.53 cents per kwhr for power supplied to them from the other Co-ops that operated their own generating plants and 1.16 cents per kwhr for purchased power resold by still other Co-ops. On the other hand, the REA Co-ops paid only 0.97 cents per kwhr for the electricity which they bought from the business-managed, federal-tax-paying power companies.

Private Companies Give Farmers More for Their Money Than the REA Cooperatives and Pay Taxes Besides.

The state-wide tabulation of customers, kwhr sold and the revenues received from ultimate consumers by the REA Cooperatives for the calendar year 1948 is shown on the opposite page. Using comparable geographic divisions, it appears that farmers use more electricity at lower rates when they are served by the locally-owned, business-managed electric power companies than they do when served by the REA. This is shown by the tabulation below, computed on the basis that 77.6 per cent of the REA customers and 71 per cent of sales and revenues represent farm service (see 1948 Statistical Bulletin of the REA, page VI).

A typical comparison of REA and company operation is afforded by the statistics for these West South Central States, where there has been so much agitation for "cheap government power." Applying the above percentages of 77.6 for number of farms and 71 for electricity used by them to the total customers shown in the large table on the opposite page, the following figures show that the REA, which purchases its power wholesale in this area at 0.69 cents per kwhr, retails it to farmers at 4.32 cents.

Summary of Amount and Cost of Energy Purchased by REA Borrowers—Fiscal Year Ending June 30 1948

	Kwhrs (Thousands)	Cost	Average Cost per Kwhr	Per Cent of Total Purchased
Purchased from Companies				
By Distributing Cooperatives	2,103,117	$19,986,633	0.95¢	50.7%
By Generating Cooperatives	265,753	2,892,020	1.09	6.4
Total Supplied by Companies	2,368,870	$22,878,653	0.97¢	57.1%
Purchased by Co-ops from Other Generating Cooperatives	220,391	3,367,694	1.53¢	5.3
Purchased from Other Public Agencies				
From Municipal Systems	317,672	3,950,462	1.24	7.6
Brazos C & R Dist.	27,233	203,925	0.75	0.7
Lower Colorado Authority	56,431	329,321	0.58	1.4
Various Power Districts*	108,005	891,133	0.83	2.6
Miscl. State and County	27,662	151,601	0.55	0.7
Miscellaneous Public Agencies	537,003	$5,526,442	1.03¢	13.0
Purchased from Federal Agencies				
From Tennessee Valley Authority	798,905	4,135,664	0.52	19.2
Bonneville Power Adm'n.	168,937	589,194	0.35	4.1
U. S. Bureau of Reclamation	50,960	416,808	0.82	1.2
Southwestern Power Adm'n	3,456	19,880	0.58	0.1
U. S. Navy	1,817	54,495	3.00	...
Total Federal	1,024,075	$5,216,041	0.51¢	24.6
Total Power Purchased	4,150,339	$36,988,830	0.89¢	100%
In addition to the above, REA Cooperatives resell purchased power				
To other Cooperatives	191,830	$2,228,544	1.16¢	

* Largely in Nebraska.
Source: "10th Annual Report of Energy Purchased by REA Borrowers, Fiscal Year Ended June 30, 1948," published by REA.

West South Central States

Served by	Avg. No. Farms	Kwhr Sold (Millions)	Kwhr Sold Per Farm per Year	Revenues Received	Average per Kwhr
REA Cooperatives	292,950	319	1,089	$13,800,000	4.32¢
Companies and Others	253,000	354	1,400	14,485,000	4.09
All Farms Served	545,950	673	1,232	$28,285,000	4.21¢

In many states the REA has extended itself into very lean territory. In 20 out of the 45 states in which REA has made loans there are not more than 3 customers per mile of line. In North Dakota, the average was only 1.5 customers per mile in 1948 as compared with 2.1 per mile of line in 1945. With an investment of $2,145 per mile of line last year, the small annual revenue of only $140 per mile was the lowest in the United States and was not sufficient to meet the charges for depreciation.

Year 1948

Region	Avg. No. Farms	Kwhr Sold (Millions)	Kwhr Sold Per Farm per Year	Revenues Received	Average per Kwhr
U. S. A. East of Rockies					
All Agencies*	3,681,680	6,936	1,884	$235,012,000	3.39¢
REA Cooperatives	1,651,450	2,627	1,591	92,528,000	3.52
Companies and Others	2,030,230	4,309	2,122	$142,484,000	3.31¢
Western Farms (Involving irrigation pumping)					
All Agencies*	420,146	4,457	10,608	62,882,400	1.41¢
REA Cooperatives	101,240	301	2,976	8,570,400	2.88
Companies and Others	318,906	4,156	13,032	$54,312,000	1.31¢

* As shown in Table 17, page 31, of EEI Statistical Bulletin No. 16, with farms located in the West South Central Division (i.e. Arkansas, Louisiana, Oklahoma & Texas) included as "Eastern Farms." REA figures include Cooperatives served by the TVA.

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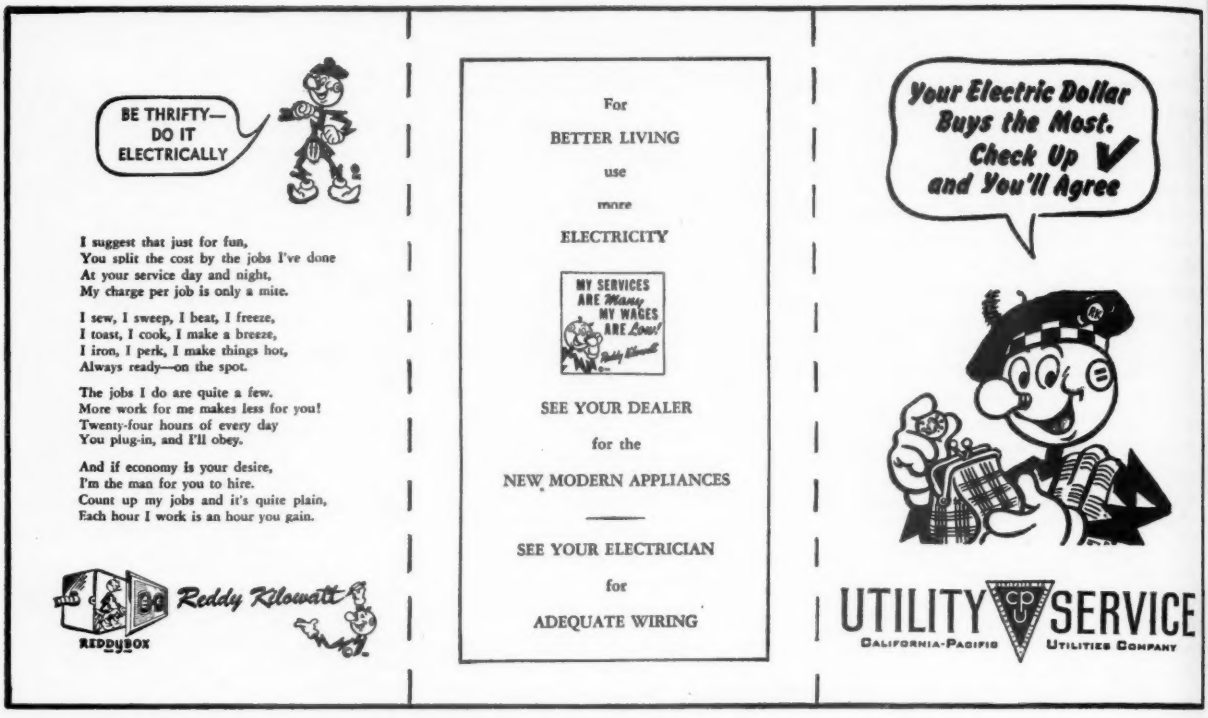
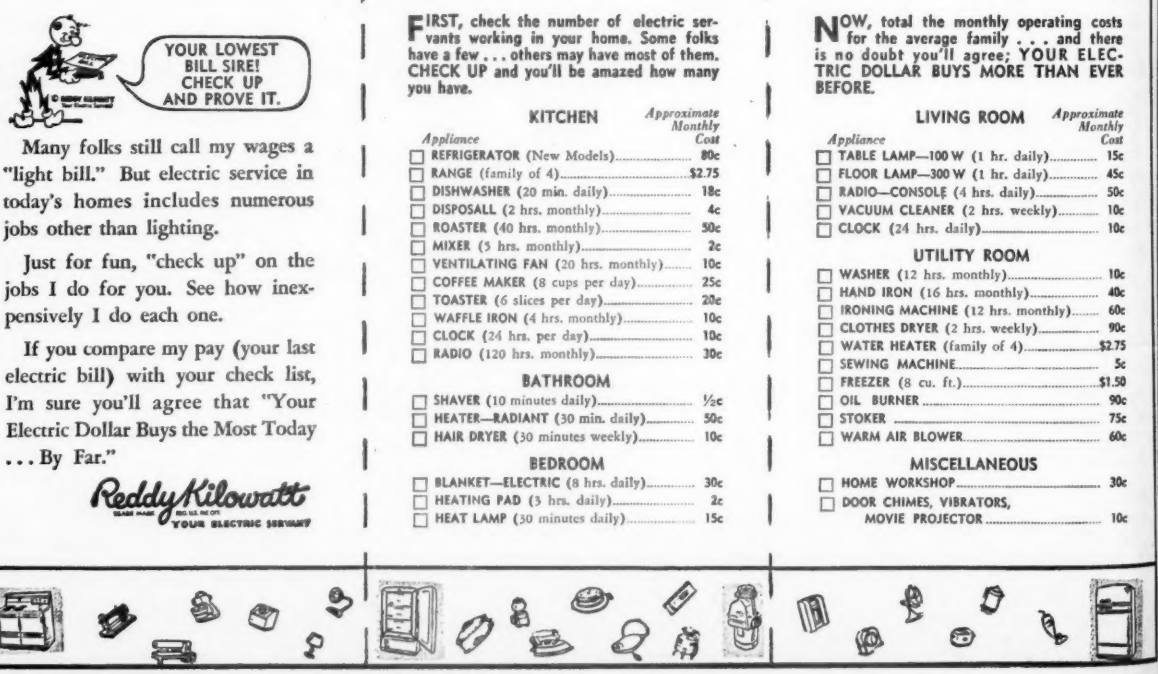
New Bill Stuffer Analyzes Appliance Operating "Wages and Hours" for Customers of California-Pacific Utilities Co.


BE THRIFTY—
DO IT
ELECTRICALLY
I suggest that just for fun,
You split the cost by the jobs I've done
At your service day and night,
My charge per job is only a mite.
I sew, I sweep, I beat, I freeze,
I toast, I cook, I make a breeze,
I iron, I perk, I make things hot,
Always ready—on the spot.
The jobs I do are quite a few.
More work for me makes less for you!
Twenty-four hours of every day
You plug-in, and I'll obey.
And if economy is your desire,
I'm the man for you to hire.
Count up my jobs and it's quite plain,
Each hour I work is an hour you gain.
Reddy Kilowatt
REDDYBOX
For
BETTER LIVING
use
more
ELECTRICITY
MY SERVICES ARE Many MY WAGES ARE Low!
SEE YOUR DEALER
for the
NEW MODERN APPLIANCES
SEE YOUR ELECTRICIAN
for
ADEQUATE WIRING
Your Electric Dollar Buys the Most. Check Up ✓ and You'll Agree
UTILITY SERVICE
CALIFORNIA-PACIFIC UTILITIES COMPANY

Both sides of the Customer Bill enclosure of California-Pacific Utilities Company, shown above and below, are designed to analyze the low cost of operating appliances and to help customers realize that the bill is not just a "light" bill, but represents the wages for a servant, as Ash Collins would say, who has worked many hours in the month at an extremely low cost per job. This simple translation of the complicated monthly bill into wages and hours makes understanding easy.


YOUR LOWEST BILL SIRE! CHECK UP AND PROVE IT.
Many folks still call my wages a "light bill." But electric service in today's homes includes numerous jobs other than lighting.
Just for fun, "check up" on the jobs I do for you. See how inexpensively I do each one.
If you compare my pay (your last electric bill) with your check list, I'm sure you'll agree that "Your Electric Dollar Buys the Most Today ... By Far."
Reddy Kilowatt
YOUR ELECTRIC SERVANT
FIRST, check the number of electric servants working in your home. Some folks have a few ... others may have most of them. CHECK UP and you'll be amazed how many you have.
KITCHEN
Appliance — Approximate Monthly Cost
☐ REFRIGERATOR (New Models) 80c
☐ RANGE (family of 4) $2.75
☐ DISHWASHER (20 min. daily) 18c
☐ DISPOSALL (2 hrs. monthly) 4c
☐ ROASTER (40 hrs. monthly) 50c
☐ MIXER (5 hrs. monthly) 2c
☐ VENTILATING FAN (20 hrs. monthly) 10c
☐ COFFEE MAKER (8 cups per day) 25c
☐ TOASTER (6 slices per day) 20c
☐ WAFFLE IRON (4 hrs. monthly) 10c
☐ CLOCK (24 hrs. per day) 10c
☐ RADIO (120 hrs. monthly) 30c
BATHROOM
☐ SHAVER (10 minutes daily) ½c
☐ HEATER—RADIANT (30 min. daily) 50c
☐ HAIR DRYER (30 minutes weekly) 10c
BEDROOM
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Tentative TD-72, 1949. Specifications issued by the Line Connectors and Splices Subcommittee, Transmission and Distribution Committee, EEI, 4 pages. Price 10 cents for single copies, 25 per cent discount for 10 to 49 copies, 50 per cent discount for 50 or more copies.

These specifications cover bolted or clamp-type connectors (non-tension), splices (tension and non-tension), and hot-line connectors used for making electrical connections between solid or stranded conductors.

These specifications do not attempt to specify design details of connectors or splices, but rather to specify required electrical and mechanical characteristics.

Specifications for Steel Bolts and Nuts

TD-1, 1949, to supersede the following specifications: NELA D209-22, D235-22, D240-22, D243-22, D246-22, D250-22; EEI TD-1, 1937. Specifications approved by the Transmission and Distribution Committee, EEI, 8 pages. Price 10 cents for single copies, 25 per cent discount for 10 to 49 copies, 50 per cent discount for 50 or more copies.

These specifications cover carriage bolts, machine bolts, double-arming bolts and nuts commonly used in overhead line construction.

Turbine and Boiler Overhaul Practice

EEI Pub. No. R-13. A report of the Turbines and Condensers Subcommittee, Prime Movers Committee, EEI, 34 pages. Price $0.50 to members and their employees; $1.25 to non-members in U.S.A.; $1.45 to foreign countries.

This report gives the results of an investigation of the practice of member companies of Edison Electric Institute relative to turbine and boiler overhauls with particular regard to length of outage time. Thirty member companies provided data describing the overhaul practice for 225 turbines having a total capacity of about 9,015,000 kw, and 497 boilers having a steaming capability of about 111,916,000 lb. per hour. The equipment covered includes "topping" installations and condensing turbines of 20,000 kw capacity and larger with complement boilers, where the steam pressure is 185 psi and above.

The information is presented in two parts. In Part I, General Practice in Connection with Overhaul of Turbine-Generators and Boilers, changes in past practice are described which have enabled some companies to increase the availability of turbine-generators and boilers by shortening overhaul periods and by increasing intervals between overhauls. It is difficult to compare practice of the various companies without rather definite knowledge of the extent of the work done. Accordingly, Part II, Methods for Inspection of Specific Items on Turbine-Generators and Boilers, has been added to present a detailed statement of current practice relative to specific items of inspection.

There are considerable differences in the practice of the companies in regard to length of the interval between overhauls and of the overhaul period. There has been a trend toward extending the interval between turbine overhauls. The general practice is to perform the first overhaul of a new turbine installation at a shorter interval than that established for normal succeeding overhauls, the initial overhaul usually being made during the first year of operation or shortly thereafter. The most prevalent interval between major overhauls of all turbines covered is three years; although there is considerable variance of practice, some companies making annual or biennial inspections and others lengthening the interval to four and five years or longer. There is a tendency to inspect "topping" turbines less frequently than condensing turbines from the standpoint of service hours. In the case of older condensing turbines which are idle for a substantial part of the year, the period between overhauls may be considerably extended by reason of scheduling the overhaul on the basis of service hours to correspond to one to three years of continuous operation. The average length of the overhaul period is about 24 days for condensing turbines and 19 days for "topping" turbines; although individual outage times vary greatly from these averages in some cases.

The great majority of companies overhaul boilers on an annual basis at a time when the boiler is scheduled for insurance inspection. Others overhaul on a three, six or eight-month schedule and two companies on a biennial schedule. In the latter case the insurance inspection for a non-overhaul year is made during a two-day weekend outage. The average length of outage for a normal major boiler overhaul is 14 days, with some companies requiring only one week and others up to four weeks.

Specifications for Impregnated-Paper-Insulated, Lead-Covered Cable, "Solid" Type (8th Edition)

EEI Pub. No. R-17. A report prepared by the Cable Engineering Section, Committee on Power Distribution, Association of Edison Illuminating Companies, 48 pages. Price $1.00 for single copies; $0.85 for ten or more copies.

These specifications are intended to apply to impregnated-paper-insulated, lead-covered cable of the "solid" type which is to be used for the transmission and distribution of electrical energy. The tests given apply only to lead-covered cable before the application of supplementary coverings, except as specifically noted for cables having non-metallic coverings over the lead sheath. The purpose of these specifications is to insure the furnishing of cable of high quality.

Consumers Power Co. Promotes Industry for Outstate Michigan in National Ad Campaign

A NATIONAL advertising campaign emphasizing the advantages of outstate Michigan as an industrial location will be launched by Consumers Power Company early in 1950, President Justin R. Whiting has announced.

Mr. Whiting said the company is re-establishing an Industrial Development Department to promote economic progress in the communities where Consumers operates. The company's service area embraces a large part of the Lower Peninsula aside from the Detroit metropolitan region and the Thumb.

Mr. Whiting said the company will sponsor a series of advertisements in several publications of national circulation directing the attention of industrialists to cities of outstate Michigan.

H. L. Brewer, hitherto purchasing agent of the company, has been appointed to head the new department, with the title of director of industrial development. He will be succeeded as purchasing agent by Harold T. Belcher, his assistant. Mr. Brewer has been associated with Consumers and affiliated companies almost continuously since 1924. Mr. Belcher joined Consumers in 1934.

San Diego Gas & Electric Lamp Bulb Contest Offers Youngsters Opportunity to Experience Free Enterprise System

A UNIQUE Lamp Bulb Contest for grade school youngsters conceived by F. M. Raymond, advertising manager of the San Diego Gas & Electric Co., San Diego, Calif., is reported in the December issue of the company magazine *News Meter,* as "specifically designed to give San Diego County youngsters a chance to learn the true meaning of the American system of private enterprise, a chance to experience, by participating in the contest, how the American system works to reward each individual effort."

Nearly one thousand boys and girls in San Diego City and County, between the ages of 8 and 15, won prizes in the contest which began Oct. 17 and closed Nov. 23, 1949. Sales of lamp bulbs credited to the contestants reached an estimated 7 million watts in the contest period. According to the *News Meter,* "Similar successes have been achieved in past years by load-building lamp bulb campaigns. And doubtless the same results in lamp sales could have been accomplished this year by repeating the type of campaign conducted in the past. That's why the real import of the Reddy Kilowatt Lamp Bulb Contest lies not so much in the resultant sales of lamp bulbs, but in its success as a means of offering an opportunity to young boys and girls—the kind of opportunity that too seldom comes to youngsters aged 8 to 15."

Youngsters in the San Diego area were given one point for each watt of the lamp bulbs purchased in their name. Lamp bulb sales were recorded by dealers on certificates which were given to contestants to pass along to people who might thus be reminded to buy lamp bulbs. Sixteen grand prizes were awarded for the highest number of points scored during the contest.

The young contestants, both boys and girls, also had the opportunity to earn one or more of over 100 additional prizes ranging from baseball bats and dolls to bicycles and wagons. Any contestant with enough earned points on his certificates to match the point value assigned these extra prizes, could exchange these points for prizes at the company offices. There was no limit to the number of prizes any one contestant could win, and all points, in addition to being used for the point prizes, were also accumulated toward the grand prizes.

W. F. Chapman, commercial manager, presented the awards to the grand prize winners at a recent Electric Show in San Diego. He congratulated the winners and spoke of all the boys and girls who entered the contest as "representing the cream of American youth the youngsters who are growing up with an understanding of the value of the American way of life."

Union Electric Employees Receive Trophies of Coffin Medal Award

UNION Electric Company of Missouri, winner of the Charles A. Coffin Award for 1948, distributed to each of its employees during the month of December, 1949, a souvenir ash tray bearing a replica of the Coffin Award medal as a personal trophy. The Coffin Award, which is presented at the annual EEI Convention, was bestowed for 1948 upon the Union Electric Company in recognition of their outstanding job of community relations.

The $1,000 prize money for the winning company's employee benefit fund, which together with a gold medal comprise the award, was made the subject of a company-wide contest to determine the best method of using the prize money to commemorate the award. Robert R. Jeffe of Union Electric won the $100 first prize with his suggestion for the distribution of souvenir trophies as the best way of attesting to the contribution of all employees to winning the award.

Chosen from among 25 electric companies representing every section of the country originally nominated by a special panel of judges for the honor, Union Electric was cited in winning the 1948 award for the "brilliant success of its highly developed, well conceived community relations program." Established by the General Electric Company and donated annually by the Charles A. Coffin Foundation, the Coffin Medal is the electric industry's most coveted recognition of merit.

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Successor to the original "I Want to Know" information booklet, the new edition offers in concise, ready-reference form a comprehensive picture of the electric industry today. Three new questions have been added to the original twenty-four —

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*The "Proceedings" of Joint Accounting Conferences of Edison Electric Institute and American Gas Association include a great many reports, papers and studies on a wide variety of subjects of interest to electric and gas utility accountants. Most of these reports and papers are not available as individual documents, but copies of the proceedings listed above, or sections thereof, can still be obtained. A request for a specific report or paper known to have been presented at one of the above conferences can often be met.

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Manual of Water Supply Equipment	.75	1.50
Home Service		
Folder—"Here's Your Career"	4.00 per 100	
R-4—Make Home Economics Your Profession (minimum lots 100)	5.00 per 100	
R-14—Patterns for Parties (Minimum Order 100)	$14.00 per 100	
Lighting Films		
"10 Charts For Use With Disney Film"	15.00	
"Light Is What You Make It"—A sound movie in technicolor, produced by Disney Productions, 16 mm., 10 minutes	Price Upon Request	
"Let There Be Light" (Street Lighting sound slide film, 15 minutes, 75 frames	25.00	
"See For Yourself" (Home Lighting) sound slide film, 15 minutes, 105 frames	30.00	
"Educating in a Truer Light" (School Lighting) Colored Sound Slide Film 22 Minutes, Over 100 Frames	50.00	
Planned Lighting Program		
Stores, Schools, Offices, Industrial Homes—(A group of promotional publications on above)	Price List Upon Request	

	Members	Non-Members
Sales Training Course		
Basic Sets of 8 Films and Records	Set	$200.00
Basic Sets of 8 Salesmen's Manuals	Set	5.00
Residential Sets of 4 Films & Records	Set	100.00
Residential Sets of 4 Salesmen's Manuals	Set	2.50
Commercial Sets of 4 Films & Records	Set	100.00
Commercial Sets of 4 Salesmen's Manuals	Set	4.00
Rural Sets of 2 Films & Records	Set	50.00
Rural Sets of 2 Salesmen's Manuals	Set	1.00
Industrial Sales Training Handbook		18.50
Residential Lighting Film & Record		30.00
Residential Lighting Salesmen's Manual		.75
Water Heating		
Self-mailers to Dealers (minimum lots 100)	1.50 per 100	
Stuffers in sets of 6 pieces (minimum lots 1000)	15.00 per 1000	
Wiring		
M-8—Handbook of Farmstead Wiring Design	.40	.40
M-7—Handbook of Residential Wiring Design	.25	.25
Wiring Films		
Commercial Re-wiring — lantern slides, with lectures	Set	$25.00
Home Wiring — lantern slides, with lectures	Set	25.00
Extra Copies Text	$1.00 per Copy	

Miscellaneous, Reference Books, etc.

	Members	Non-Members
R-17—Specifications for Impregnated Paper-Insulated, Lead-Covered Cable, "Solid" Type (8th Edition) AEIC, 1949	1.00	1.00
R-16—"I Want to Know *More* About the Electric Industry" Answers to 27 Questions Most Frequently Asked the Electric Industry—1949 Edition	2—99 copies 25c each 100—900 copies $12 per hundred 1000—9000 copies $90 per thousand 10,000 or more copies $80 per thousand	
R-15—Sixth Semi-Annual Electric Power Survey, 1949	.30	.30
Q-13—"Take a Look at the Outlook"	10c	
Q-14—"I Want to Know About the Electric Industry"	2—100 copies 30c each 100—1,000 copies $25 per 100 1,000—9,000 copies $200 per 1000 10,000 or more copies $140 per 1000	
Q-5—Specifications for Impregnated Paper-Insulated Lead Covered Cable, "Low Pressure, Gas-Filled" Type—AEIC 1948	Single copies 10 or more "	$1.00 .85
M-13—Specifications for Impregnated Paper-Insulated Lead Covered Cable, "Solid" Type, "Oil-Filled" Type	Single copies 10 or more "	$1.00 .85
Objective Type Rates, 1933-1936	.80	2.00
Ice and Wind Loading Tables for Overhead Line Conductors (Revision of Tables 85 to 96 of the Overhead System Reference Book) 1942	1-4 copies 5-49 "	10c 6c
Rate Book for 1947	20.00	30.00
Storm Loading and Strength of Wood Pole Lines and a Study of Wind Gusts (1936)	2.00	5.00
Weekly, Monthly and Annual Statistics (Includes Annual Statistical Bulletin; Weekly Electric Power Output; Monthly Electrical Research Statistics)	2.00	2.00

Periodicals

	Members	Non-Members
Home Service Exchange (5 or 6 issues a year) Up to 5 copies to Home Service Directors, Member Companies		Free
EEI-Member Yearly Subscriptions.		.50
Non-Member Yearly Subscriptions.		.75
Commercial Sales Log (several issues per year)	Each issue priced individually	
Better Light—Better Sight News (6 issues yearly)	1.00	1.00
Edison Electric Institute Bulletin (Monthly)	2.00	2.00
Farm Electrification (a bi-monthly publication) Up to 10 copies	Free	
Over 10 copies	.75	1.00
Discount for orders of 25 or more paid subscriptions, if mailed in bulk to one address	25%	
Discount for orders of 25 or more paid subscriptions, if mailed to separate addresses	10%	

PERSONALS

Elmer L. Lindseth, president of The Cleveland Electric Illuminating Company, has announced that WILLIAM H. FILLMORE, of Cincinnati, has resigned from the board of directors of the company, and JAMES F. FOGARTY of New York City has been elected a member of the board.

Mr. Fillmore served as a member of the Illuminating company board 36 years. During this period the company's assets increased from $16,000,000 to over $260,000,000, or more than 16 times. From 1901 to 1948 as the head of William H. Fillmore and Co. of Cincinnati, consultants on corporate investments, Mr. Fillmore has been widely recognized as an authority in the field of finance.

Mr. Fogarty was a director of the Illuminating company from 1933 to 1947. During this period he was president and later chairman of the executive and finance committee of the North American Co., which at that time owned a majority interest in the Illuminating company.

When the North American Company disposed of its holdings in the Illuminating company, Mr. Fogarty gave up his Illuminating company directorship. He continued as chairman of North American's executive and finance committee until last November, when he resigned that position to continue as chairman of the West Kentucky Coal Company.

R. E. BURGER, president and chairman of the board of directors of The Ohio Public Service Co., has been elected a director of Ohio Edison Co. and was also appointed Chairman of the Executive Committee. The Ohio Public Service Co. became a subsidiary of Ohio Edison Company on Dec. 23, 1949, at which time the Edison Company acquired the 2,000,000 shares of Public Service's outstanding 3,000,000 shares of common stock previously owned by Cities Service Company.

A graduate of the University of Missouri, Mr. Burger has been connected with the public utility industry for 42 years. He began his career as an apprentice engineer with the Denver Gas & Electric Co. in 1907 and became general manager of the Fremont (Nebraska) Gas & Electric Co. in 1910. From 1912 to 1920 he served in a general supervisory capacity for Cities Service Co. in Ohio in the consolidation, construction and management of various units which now compose The Ohio Public Service Co. He then became operating manager of all public utilities of Cities Service Co. and in 1941 was made president of Cities Service Power & Light Co. In 1945 he was elected to his present position of president and chairman of the board of directors of The Ohio Public Service Co.

JAMES W. PARKER, president and general manager of the Detroit Edison Co., and Henry Ford 2d, president of the Ford Motor Company, were elected to the Board of Directors of the Manufacturers National Bank of Detroit at the annual stockholders meeting.

WILLIAM WEBSTER has been appointed executive vice president of New England Electric System, Boston. His former post as president of Narragansett Electric Co., a Providence, R. I., subsidiary, will be filled by THOMAS G. DIGNAN, principal officer of NEES utilities in the Mystic Valley, North Shore, and Northeastern districts.

Mr. Dignan's Mystic Valley and North Shore responsibilities will be taken over by NEWELL A. CLARK, principal officer in the Western district of Massachusetts, who will be succeeded by CHANDLER W. JONES, assistant vice president.

Mr. Webster joined New England Power System in 1928 and became assistant manager of the Southern district, then executive vice president and later president of the Narragansett company. In 1942 he was made vice president of what is now NEES.

During World War II Mr. Webster was active in the work of the National Defense Research Committee and consultant to the Office of Scientific Research and Development. He is chairman of the New England Council's atomic energy committee and a consultant to the Atomic Energy Commission. More recently he was on leave of absence in Washington as deputy secretary of defense for atomic energy. He acted as aide to the Secretary of Defense and chairman of the military liaison committee of AEC.

Mr. Dignan joined the system's corporate department in 1928 and became assistant general counsel. From 1930 to 1932 he was manager of Lowell (Mass.) Electric Light Corp. and then was named secretary of the system. Later he served as president of the then Worcester (Mass.) Electric Light Co. and of New England Power Service Co., both NEES subsidiaries.

Mr. Clark, who has been with the system since 1921, has held executive posts with several of the subsidiaries. Among titles he has held are those of manager of Fall Mountain Electric Co., Bellows Falls, Vt.; assistant general manager of Narragansett Electric; manager of Quincy (Mass.) Electric Light & Power Co.; and manager of the North Central district.

Mr. Jones entered system employ in 1927. Later he was assistant engineer at Boston and Providence and district engineer in New Hampshire and Vermont. During the war he was chief of equipment for the production branch of the Office of War Utilities.

The following organization changes in The Connecticut Light and Power Company have been announced: J. E. KING, operating vice president, has retired; SHERMAN R. KNAPP, formerly assistant to the president, was elected executive vice president and CALVIN T. HUGHES, formerly general superintendent, was elected operating vice president to succeed Mr. King; WALTER W. FORMAN, formerly assistant general superintendent, will succeed Mr. Hughes as general superintendent.

Mr. King, an outstanding electrical engineer for many years, holds several patents affecting the production and transmission of electricity. He began his utility career with the Citizens Light and Power Company of Fulton, New York, and subsequently accepted a position with a larger neighboring utility, The Syracuse Lighting Company. In 1919, he joined CL&P as distribution engineer and was largely responsible for the planning and growth of the Company's widespread electric system. In 1928, Mr. King was appointed operating superintendent and in 1937 general superintendent. He was elected operating vice president in 1939.

Mr. Knapp, the Company's newly elected executive vice president, is an engineering graduate of Cornell University and joined the Company in 1928 immediately after graduation. He was

successively office engineer and assistant engineer in the general operating department at Waterbury and from 1932 until 1937 was assistant to the industrial power engineer in Hartford. He was made New Milford district manager in 1937 and held that position until 1941 when he was appointed assistant to the sales vice president in Waterbury. In May, 1948, Mr. Knapp was appointed assistant to the president.

Mr. Hughes, the newly elected operating vice president, has been with the Company thirty-one years. He is a graduate electrical engineer from the University of Oklahoma and a World War I veteran. He joined the Company in 1918 as cadet engineer and held successively the positions of assistant, electrical and general engineer. In 1939, Mr. Hughes was appointed general superintendent.

Mr. Forman, who succeeds Mr. Hughes as general superintendent, is a graduate of Stevens Institute of Technology and entered the public utility field in 1923 with the Adirondack Power and Light Company, later becoming associated with W. A. Shoudy, New York utility construction engineers. He joined the United Gas Improvement Company in 1927 and in 1929 came to CL&P as general engineer. Mr. Forman was appointed assistant general superintendent in 1943.

C. J. Allen, vice president in charge of public relations, Connecticut Light and Power Co., Waterbury, has announced that PAUL V. HAYDEN, industrial manager, has been transferred to the company's Public Relations Department as executive assistant, and A. V. S. Lindsley, vice president in charge of sales, has named JAMES H. DOAK as an executive assistant in his department.

Mr. Hayden, a charter member of the State Development Commission, and currently Chairman of the Commission's Industrial Advisory Committee, joined The Connecticut Light and Power Co. in 1929 as industrial power engineer in Danielson. A 1925 graduate of Brown University, he had previously been employed by Westinghouse Electric Corp. In 1940, Mr. Hayden was transferred to the company's Willimantic offices as industrial power engineer, and, in 1947, became engineer for special assignments with the Waterbury sales staff. In 1948 Mr. Hayden was named industrial manager.

Mr. Doak is a graduate of the U. S. Naval Academy at Annapolis and joined The Connecticut Light and Power Co. as an engineer in 1923. In 1927 he was located in Putnam as gas production and distribution engineer, and in 1929 was named industrial gas engineer for the Company's Central Division.

J. A. FULLER, a vice president of The Shawinigan Water and Power Co., has been named executive vice president. E. GRAY-DONALD, heretofore chief engineer of Quebec Power Co., moves to the Shawinigan company as vice president and chief engineer. R. H. MATHER becomes assistant to the vice president and chief engineer. A. C. ABBOTT succeeds Mr. Mather, who was formerly manager of the Commercial and Distribution Department.

SHERMAN L. MUTHS and DANA G. KING have been elected vice presidents of Mississippi Power Co.

Mr. King, who has been assistant to the president, and Mr. Muths, who has been operating manager, have been with the company since its first year of operation, 1925. They have been directors since 1942.

Mr. Muths, born in Mobile, was graduated from Alabama Polytechnic Institute with a bachelor of science degree in electrical engineering in 1922.

Mr. King, a native of Cherokee, Ia., has been in Mississippi since 1912. He received his bachelor of science degree in electrical engineering from Mississippi State College in 1924.

R. H. HALPENNY has been named vice president and executive engineer of California Electric Power Co., Riverside. He has been chief engineer of the company since 1942.

W. B. LOPER, appointed chief engineer, has been succeeded as assistant executive engineer by WILLIS T. JOHNSON, former general superintendent. H. E. PANGBORN, who has been assistant general superintendent, was made general superintendent.

Mr. Halpenny's new duties will include coordination of the company's engineering, operating and construction activities. He joined Calepco in 1910 in Nevada in the early days of the utility's service to the mining camps of Tonopah and Goldfield. In 1913 he was made engineer at Bishop and two years later at Riverside. In 1921 he was appointed electrical engineer.

Mr. Loper was superintendent at Barstow from 1922 to 1925 and at Brawley from 1925 to 1947. Later he served as engineer at Riverside and assistant distribution engineer. Mr. Johnson, who joined Calepco in 1925, has served as district superintendent of operations, district manager, and division superintendent.

ARTHUR J. DARRAH, vice president and manager of the Huntington division of Appalachian Electric Power Co., has retired. H. D. STILLMAN, assistant manager of the Huntington division since 1943, will succeed him as division manager. Mr. Darrah's public utility experience began in 1908 with Van Wert Public Service Corp. in Van Wert, Ohio. Later he was manager of Mount Vernon Railway & Light Co., also in Ohio, and then of Orange County Public Service Corp., Middletown, N. Y. He joined what is now AEP in 1919. A new 132-kv substation now under construction in Guyandotte, W. Va., has been named for him. Mr. Stillman has been with the utility since 1926, after starting in 1923 as junior engineer for Kentucky & West Virginia Power Co. He has served as meter superintendent, assistant division manager at Logan, W. Va., manager of the Logan district, and assistant manager of the Huntington division.

JAMES F. BOYER has been appointed to the legal staff of West Penn Power Co. to assist C. L. MCCORMICK, head of the company's legal department.

Mr. Boyer graduated from the University of Michigan Law School in 1930. Following a period of private practice in Monongahela, he was named chief of the legal bureau of the Pennsylvania Turnpike Commission in 1938. Four years later, he was appointed to his most recent position as assistant U. S. Attorney with the Department of Justice at Pittsburgh. He is a member of the Washington County Bar Association and the Pennsylvania Bar Association.

T. L. BISSELL, manager of the industrial power division of Alabama Power Co., has resigned to open a sales engineering agency in Charleston, S. C. He will be succeeded by EDWARD A. WILSON, a member of the department since 1922. W. S. SEALE, sales supervisor, has been appointed merchandise sales manager. He joined the company in 1932 as a salesman.

VICTOR E. HULETT, former commercial manager for Public Service Co. of Oklahoma in Sand Springs, has been appointed assistant to the vice president in charge of the southwestern division at Chickasha. He went to Oklahoma in 1934 as commercial manager and a director of the former Oklahoma Power & Water Co., later acquired by Public Service.

MALCOLM V. TILLETT, formerly commercial sales supervisor for the Akron division of Ohio Edison Co., has become manager of the Barberton district, succeeding FRANKLYN DICKINSON, who has been made general industrial development representative of the utility, with headquarters in Akron. Mr. Tillett joined Northern Ohio Power & Light Co., Ohio Edison predecessor, in 1930 and has been commercial sales supervisor since 1946. Mr. Dickinson began his utility career in 1928 as design engineer for Alabama Power Co. In 1937 he came to Ohio Edison as plant accountant and later became supervisor of the department.

L. V. DUGAS, power engineer, Gulf States Utilities Co., Beaumont, Tex., was elected president of the Petroleum Electric Power Association at its 1949 convention in Beaumont. T. E. GRAHAM, sales engineer for Oklahoma Gas & Electric Co., was chosen secretary.

MASON C. ALBRITTAIN has been appointed general manager of the industrial and commercial department of Consolidated Gas, Electric Light and Power Co. of Baltimore. With the utility for 25 years, most recently he has been assistant general manager of the department. Mr. Albrittain succeeds RICHARD H. TILLMAN, who retired recently after 40 years' service.

GEORGE L. SUTHERLAND, manager of the substation operation department of Consolidated Edison Co. of New York, has retired after 21 years with the company. Among positions he has held are senior engineer in the electrical engineering division of Stone and Webster, Boston; electrical engineer of United Electric Light and Power Co.; chief electrical engineer of Duquesne Light Co.; general superintendent of New York & Queens Electric Light & Power Co.; and assistant manager of the outside plant construction department and general stores manager of the purchasing stores department of Con Ed. He was U. S. technical adviser on proposed international standards for electrical generation and distribution equipment at the International Electro-Technical Commission at Stresa, Italy, last summer. He has served as chairman of the sectional committee on power switchgear of the American Standards Association; chairman of the Joint Committee on Power Circuit Breakers of Edison Electric Institute, Association of Edison Illuminating Companies, and the National Electrical Manufacturers Association; and member of the board of examiners of the American Institute of Electrical Engineers.

H. A. BROWN has been made assistant superintendent of the new department of Electric operations and planning for Rochester Gas & Electric Corp. Mr. Brown is succeeded as superintendent of electric meter laboratory and appliance testing department by EDWARD J. NELSON, who has been assistant superintendent.

HARRY MCCANN has been made manager of the Missoula Division of Montana Power Co., succeeding AUBREY KNOWLES, who has retired. Mr. McCann has been general operating superintendent for the division since 1942. He joined Missoula Public Service Co. in 1929 and after its purchase by Montana Power became general superintendent of the Missoula Division in 1937. Mr. Knowles started as a troubleshooter, first for Billings & Eastern Montana Power Co. and then for Montana Power at Billings. Later he served as manager at Bigtimber, Hardin, Roundup, Anaconda, and Missoula, Mont.

HENRY L. MARTIN has been appointed electric and steam sales manager of Boston Edison Co., with J. William Megley as assistant manager. Mr. Martin succeeds S. MURRAY JONES, named assistant director of rate research and statistics. DALE WASHBURN, who formerly held Mr. Jones' new post, has been transferred to the vice president's staff in charge of engineering and operations. PAUL E. SIMPSON has been named assistant to Sales Manager G. C. King.

ROBERT A. OLSON, secretary of Kansas City Power & Light Co., has also been named treasurer of the company. He succeeds FRANK P. CLARK, who recently resigned because of ill health.

Mr. Olson joined the Kansas City utility in 1947 as secretary after 12 years with United Light & Railways Service Co. in Chicago. He started with the service company in its law department. In 1942 he was appointed to assist Harry B. Munsell, then a vice president of the United system and now Kansas City P&L president. As a member of United Light & Railways Service Co.'s finance committee, he took an active part in KCP&L's financing.

HENRY B. BRYANS, president of Philadelphia Electric Co., has been elected to his fifth consecutive term as president of the Electrical Association of Philadelphia.

Thomas A. Edison—"A Man of the Half-Century"

(*Continued from page* 17)

phetic sense, said of Edison: "There is no one like him. He is the one-man-to-the-century inventor. Millions of people all over the world are his debtors. . . . He is an indispensable asset of our nation."

Edison has certainly proved to be a man of the half-century, and a number of electric companies, as well as the Institute, are proud to have his name included in theirs. His achievements increase in significance as we build an ever-growing edifice of progress on them. We are sure that when the year 2000 turns up on the calendar, Thomas A. Edison will still hold his rightful place as the great contributor to 20th Century civilization.

The Spirit of the "Dead-End" Kids

(*Continued from page* 18)

pany, but I also know that every new tax burden imposed on one industry becomes a precedent for imposing a still bigger one on the next.

If we hope to preserve the free enterprise system, we must accept the fact that competition that is always comfortable for all competitors is not competition, and if it is not competition it cannot long remain free. It is a striking commentary on the strange times in which we live that a nation which has so many men willing to risk their lives on the battlefield to preserve our

way of life have so few willing to risk their livelihood for a principle — the principle on which that way of life is founded. Unless a businessman is ready to accept the consequences of competition up to and including the limitation of his business, he is not a true free enterpriser, but merely an opportunist on a free enterprise bandwagon. As such he's not worth a damn when it comes to fighting off the Totalitarian Redskins.

The function of the price system is to encourage the production of those goods and services that people want, and to discourage those for which people no longer have any use. If any of us happen to be in a business that no longer would be missed, we know how it hurts. . . . It has been well said that progress is measured by the amount of obsolescence a nation will tolerate. Progress is a form of competition, ofttimes the most painful form for those engaged in the competition but always the most beneficial in the long run.

In a very real sense your industry is the keystone of the free enterprise arch. If you fall, the rest of us are not likely to stand long. Freedom is indivisible, as even a monkey with only 25 per cent of his paws in a trap well knows. Compete, yes, as hard as you can, but beware of asking the government to help you or to handicap your competitors. . . . If we are smart enough not to fall for the oldest "skin game" known to man—and that is not very smart—we can save free enterprise here, and fan into new life the flickering flame of freedom throughout the world.

Fourth National Farm Electrification Conference

(*Continued from page* 21)

"The Man Who Sells the Farmer," with F. E. Watts, executive assistant, *Farm Journal,* as chairman.

Twenty-three national organizations which participate in the program of the National Farm Electrification Conference, include such groups as the Agricultural Education Service, American Farm Bureau Federation, National Electrical Manufacturers Association, American Home Economics Association, American Washer and Ironer Manufacturer's Association, Agricultural Editors Association, Edison Electric Institute, National Appliance and Radio Dealers Association and the American Society of Agricultural Engineers.

CONVENTIONS AND MEETINGS

1950

FEBRUARY

6-7 Prime Movers Committee, EEI, Rice Hotel, Houston, Texas.
9-10 Accident Prevention Committee, EEI, Shamrock Hotel, Houston, Texas.
13-14 Electrical Equipment Committee, EEI, Netherlands-Plaza Hotel, Cincinnati, Ohio.
16 Industrial Relations Committee, EEI, Palmer House, Chicago, Ill.
16-17 Pennsylvania Electric Association, Transmission and Distribution Committee, Penn-Harris Hotel, Harrisburg, Pa.
20-21 Transmission and Distribution Committee, EEI, Statler Hotel, Detroit, Mich.
23-24 Pennsylvania Electric Association, Prime Movers and Electrical Equipment Committees, Robert Treat Hotel, Newark, N. J.
25 Technical Valuation Society Annual Conference, New York, N. Y.

MARCH

13-16 National Electrical Manufacturers Association, Edgewater Beach Hotel, Chicago, Ill.
16 Industrial Relations Committee, EEI, New York, N. Y.
29-31 Missouri Valley Electric Association, 21st Annual Engineering Conference, President Hotel, Kansas City, Mo.

APRIL

4-6 16th EEI Annual Sales Conference, Edgewater Beach Hotel, Chicago, Ill.
4-7 National Association of Corrosion Engineers, Annual Conference and Exhibition, Jefferson Hotel, St. Louis, Mo.
10-14 American Society of Mechanical Engineers, Spring Meeting, Washington, D. C.
17-19 1950 Conference of Electric and Gas Utility Accountants, Brown Hotel, Louisville, Ky.
17-19 Meter and Service Committee, EEI, Netherlands-Plaza Hotel, Cincinnati, Ohio.
18-19 Indiana Electric Association, Young Men's Utility Conference, Indianapolis, Ind.
19-20 American Institute of Electrical Engineers, Power Conference, Wm. Penn Hotel, Pittsburgh, Pa.
20 Industrial Relations Committee, EEI, Netherlands-Plaza Hotel, Cincinnati, Ohio.
24-26 Purchasing and Stores Committee, EEI, Schroeder Hotel, Milwaukee, Wis.
25-26 Pennsylvania Electric Association, Accounting Conference, Pittsburgh, Pa.
26-28 American Institute of Electrical Engineers, North East District Meeting, Providence, R. I.
26-28 Northwest Electric Light & Power Association, Engineering & Operation Section, Vancouver Hotel, Vancouver, B. C.

MAY

1-4 38th Annual Meeting, Chamber of Commerce of the USA, Washington, D. C.
2-3 Electrical Equipment Committee, EEI, Edgewater Beach Hotel, Chicago, Ill.
3 Missouri Association of Public Utilities, Joplin, Mo.
4-5 Oklahoma Utilities Association, Biltmore Hotel, Oklahoma City, Okla.
11-12 American Institute of Electrical Engineers, Great Lakes District Meeting, Jackson, Mich.
15-18 54th Annual Meeting, National Fire Protection Association, Haddon Hall, Atlantic City, N. J.
23-26 National District Heating Association, Grove Park Inn, Asheville, N. C.
31-June 2 Pacific Coast Electrical Association, Inc., Reno, Nevada.

JUNE

5-7 EDISON ELECTRIC INSTITUTE, Annual Meeting, Atlantic City, N. J.
12-16—National Association of Electrical Distributors, Atlantic City, N. J.
12-16 American Institute of Electrical Engineers, Summer Meeting, Pasadena, Calif.
15-19 Canadian Electrical Association, 60th Annual Convention, Manoir Richelieu, Murray Bay, Que., Canada.
19-21 American Society of Heating & Ventilating Engineers, Semi-annual Meeting, Muskoka Lakes, Ontario, Can.
19-23 American Society of Mechanical Engineers, Semi-Annual Meeting, St. Louis, Mo.
26-30 American Society for Testing Materials, Atlantic City, N. J.

AUGUST

21-25 Illuminating Engineering Society National Technical Conference, Hotel Huntington, Pasadena, Calif.

SEPTEMBER

25-27 American Trade Association Executives Annual Meeting, Somerset Hotel, Boston, Mass.
27-29 Canadian Electrical Manufacturers Association Annual Meeting, General Brock Hotel, Niagara Falls, Ontario, Can.

OCTOBER

2-6 American Gas Association Annual Convention, Atlantic City, N. J.
16-20 38th National Safety Congress, Chicago, Ill.

NOVEMBER

13-16 National Electrical Manufacturers Association, Chalfonte-Haddon Hall, Atlantic City, N. J.
27-29 American Standards Association Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

ELMER L. LINDSETH, *President*.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
L. V. SUTTON, *Vice-President*.....Carolina Power & Light Co., Raleigh, N. C.
H. S. BENNION, *Vice-President and Managing Director*...420 Lexington Avenue, New York, N. Y.
K. B. CRUMB, *Treasurer*.....American Gas & Electric Service Corp., New York N. Y.
MAE B. WOODS, *Secretary*.....420 Lexington Avenue, New York, N. Y.

BOARD OF DIRECTORS

(Terms Expiring 1950)

E. R. ACKER.....Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
AUSTIN D. BARNEY.....The Hartford Electric Light Co., Hartford, Conn.
REX I. BROWN.....Mississippi Power & Light Co., Jackson, Miss.
E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
L. M. KLAUBER.....San Diego Gas & Electric Co., San Diego, Calif.
J. A. LONGLEY.....Central Illinois Light Co., Peoria, Ill.
H. B. MUNSELL.....Kansas City Power & Light Co., Kansas City, Mo.
R. S. NELSON.....Gulf States Utilities Co., Beaumont, Texas
C. E. OAKES.....Pennsylvania Power & Light Co., Allentown, Pa.
B. F. PICKARD.....Interstate Power Co., Dubuque, Iowa
MCGREGOR SMITH.....Florida Power & Light Co., Miami, Fla.
A. C. SPURR.....Monongahela Power Co., Fairmont, W. Va.
L. V. SUTTON.....Carolina Power & Light Co., Raleigh, N. C.
O. TITUS.....Metropolitan Edison Co., Reading, Pa.

(Terms Expiring 1951)

J. T. BARRON.....Public Service Electric and Gas Co., Newark, N. J.
J. M. BARRY.....Alabama Power Co., Birmingham, Ala.
GEORGE M. GADSBY.....Utah Power and Light Co., Salt Lake City, Utah
D. E. KARN.....Consumers Power Co., Jackson, Mich.
J. E. LOISEAU.....Public Service Co. of Colorado, Denver, Colo.
PAUL B. MCKEE.....Pacific Power and Light Co., Portland, Ore.
C. B. MCMANUS.....Georgia Power Co., Atlanta, Ga.
S. C. MCMEEKIN.....South Carolina Electric & Gas Co., Columbia, S. C.
GROVER C. NEFF.....Wisconsin Power and Light Co., Madison, Wis.
P. H. POWERS.....West Penn Power Co., Pittsburgh, Pa.
HAROLD QUINTON.....Southern California Edison Co., Los Angeles, Calif.
J. B. THOMAS.....Texas Electric Service Co., Ft. Worth, Texas
JOHN T. WARD.....Boston Edison Co., Boston, Mass.
W. F. WYMAN.....Central Maine Power Co., Augusta, Maine

(Terms Expiring 1952)

W. C. BECKJORD.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
H. B. BRYANS.....Philadelphia Electric Co., Philadelphia, Pa.
H. C. CUMMINS.....Northern States Power Co., Minneapolis, Minn.
CHAS. B. DELAFIELD.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
W. G. B. EULER.....Pacific Gas and Electric Co., San Francisco, Calif.
F. C. KELLOGG.....Pioneer Service and Engineering Co., Chicago, Ill.
C. E. KOHLHEPP.....Wisconsin Public Service Corp., Milwaukee, Wis.
P. H. MCCANCE.....Duquesne Light Co., Pittsburgh, Pa.
R. E. MOODY.....Union Electric Company of Missouri, St. Louis, Mo.
IRWIN L. MOORE.....New England Electric System, Boston, Mass.
A. T. O'NEILL.....Buffalo Niagara Electric Corp., Buffalo, N. Y.
HAROLD TURNER.....The Ohio Power Co., Canton, Ohio
G. W. VAN DERZEE.....Wisconsin Electric Power Co., Milwaukee, Wis.
FRANK M. WILKES.....Southwestern Gas & Electric Co., Shreveport, La.

Executive Committee

The Executive Committee consists of the following members of the Board of Directors: Austin D. Barney, W. C. Beckjord, H. B. Bryans, Chas. B. Delafield, P. H. McCance, Chas. E. Oakes, P. H. Powers, O. Titus, J. T. Ward.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

(Continued)

ADVISORY COMMITTEE 1949-1950

D. C. BARNES.....Virginia Electric & Power Co., Charlottesville, Va.
E. F. BARRETT..Long Island Lighting Co., Mineola, N. Y.
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J. B. BLACK.....Pacific Gas and Electric Co., San Francisco, Calif.
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